

AREA-WIDE AQUIFER PROTECTION PERMIT NO. P-100388
PLACE ID 3507, LTF 64999, Significant Amendment

1.0 AUTHORIZATION

In compliance with the provisions of Arizona Revised Statutes (A.R.S.) Title 49, Chapter 2, Articles 1, 2 and 3, Arizona Administrative Code (A.A.C.) Title 18, Chapter 9, Articles 1 and 2, A. A. C. Title 18, Chapter 11, Article 4 and amendments thereto, and the conditions set forth in this permit, the Arizona Department of Environmental Quality (ADEQ) hereby authorizes **Arizona Public Service Company**, as a joint owner and the operating agent for the other joint owners:

1. **Salt River Project Agricultural Improvement and Power District**
2. **Southern California Edison Company**
3. **El Paso Electric Company**
4. **Public Service Company of New Mexico**
5. **Los Angeles Department of Water & Power**
6. **Southern California Public Power Authority**

to operate the discharging facilities listed in this permit at the **Palo Verde Nuclear Generating Station** (Facility) located in Tonopah, Arizona, approximately 50 miles west of downtown Phoenix in Maricopa County over groundwater of the Lower Hassayampa groundwater basin, within the Phoenix Active Management Area, in all or portions of Township 1 North, Range 6 West, Sections 26, 27, 28, 33, 34 and 35 and Township 1 South, Range 6 West, Sections 2, 3, 4, 9 and 10, of the Gila and Salt River Baseline and Meridian.

This permit becomes effective on the date of the Water Quality Division Director's signature and shall be valid for the life of the facility (operational, closure, and post-closure periods), unless suspended or revoked pursuant to A.A.C. R18-9-A213. The permittee shall construct, operate and maintain the permitted facilities:

1. Following all the conditions of this permit including the design and operational information documented or referenced below, and
2. Such that Aquifer Water Quality Standards (AWQS) are not violated at the applicable point(s) of compliance (POC) set forth below, or if an AWQS for a pollutant has been exceeded in an aquifer at the time of permit issuance, that no additional degradation of the aquifer relative to that pollutant, and as determined at the applicable POC, occurs as a result of the discharge from the facility.

1.1 Permittee Information

Facility Name:	Palo Verde Nuclear Generating Station	
Annual Registration Fee Flow Rate:	Greater than 10 Million Gallons per Day (gpd)	
Permittee:	Mailing Address:	Facility Street Address:
APS – Palo Verde Nuclear Generating Station	P.O. Box 52034, M.S. 7626 Phoenix, Arizona 85072-2034	5801 South Wintersburg Road Tonopah, Arizona 85354-7529
Facility Contact:	Environmental Department Leader	623-393-4972
Emergency Telephone Number:	Water Reclamation Facility Shift Supervisor	623-393-3002
Latitude:	33° 22' 40" North	
Longitude:	112° 51' 34" West	
Legal Description:	See Section 14.0 of this permit	

1.2 Authorizing Signature

Trevor Baggione, Director
Water Quality Division
Arizona Department of Environmental Quality
Signed this ____ day of _____, 2017

Laura L. Malone, Director
Waste Programs Division
Arizona Department of Environmental Quality
Signed this ____ day of _____, 2017

THIS PERMIT AMENDMENT SUPERSEDES ALL PREVIOUS AMENDMENTS TO THIS PERMIT

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2.0 SPECIFIC CONDITIONS [A.R.S. §§ 49-203(4), 49-241(A)]

2.1 Facility / Site Description [A.R.S. § 49-243(K)(8)]

The Palo Verde Nuclear Generating Station (PVNGS) began operations in 1985 and at this time is expected to have an operational life of at least 60 years. The PVNGS is an existing electric generating baseload plant, utilizing nuclear fission for generation of electrical power. The 4,280-acre Facility is located west of Phoenix, Arizona.

The generating Facility consists of three, separate, identical, generating units/reactors, each equipped with three cooling towers. Each generating unit (also referred to in this permit as Unit) is capable of independent operation. These units have a nominal net electrical output of approximately 1,346 megawatts (MW) each for a total plant capacity of about 4,038 MW. Each Unit also includes associated structures: auxiliary building; radioactive waste (radwaste) building; fuel building; control building; diesel generator building; main steam support structure; access building; spray ponds and cooling towers; and an oil/water separator.

Major common installations serving all three Units include: administrative offices; maintenance, fire protection and security facilities; control room simulators and other training facilities; emergency facilities; a Water Reclamation Facility (WRF); a re-engineered 85-acre water storage reservoir (WSR) (formerly known as the 80-acre WSR) for storing treated effluent reused for cooling water; a 45-acre water storage reservoir (WSR); a sewage treatment plant for domestic sewage; three double-lined evaporation surface impoundments; two unlined stormwater sedimentation basins; a rubbish landfill; a sludge disposal landfill; a concrete/inert landfill; hazardous waste accumulation/storage facilities; low-level radioactive waste interim storage facilities including an above-ground spent fuel cask storage area located on a concrete pad; warehouses; and railroad and road facilities. A 500-kilovolt (KV) switchyard is also located at the PVNGS site and is managed and operated by Salt River Project (SRP). This switchyard is not regulated under the Aquifer Protection Permit (APP) program. Exempt facilities are listed in the Fact Sheet accompanying this permit.

The site includes the following permitted discharging facilities:

Facility	Latitude (North)	Longitude (West)
85-acre Water Storage Reservoir	33° 23' 30"	112° 51' 00"
45-acre Water Storage Reservoir	33° 23' 45"	112° 50' 48"
Evaporation Pond 1(Cells 1A, 1B, 1C)	33° 22' 00"	112° 52' 08"
Evaporation Pond 2 (Cells 2A, 2B, 2C)	33° 22' 00"	112° 51' 30"
Sludge Disposal Landfill (Cooling Tower and WRF sludge)	33° 23' 47"	112° 51' 00"
Rubbish Landfill	33° 23' 06"	112° 51' 00"
Evaporation Pond 3 (Cells 3A and 3B)	33° 21' 29"	112° 52' 08"

The site includes the following clean-closed facilities:

Facility	Latitude (North)	Longitude (West)
Unlined Sedimentation Basin 1 (including ditches)	33° 22' 25"	112° 52' 20"
Unlined Sedimentation Basin 2 (including ditches)	33° 22' 21"	112° 51' 21"

2.1.1 APP Annual Registration Fee [A.R.S. § 49-242 and A.A.C. R18-14-104]

The annual registration fee for this permit is payable to ADEQ each year. The permitted flow for fee calculation is more than 10 million gallons per day (MGD). If the facility is not yet constructed or is incapable of discharge at this time, the permittee may be eligible for reduced fees under the rule.

Send all correspondence requesting reduced fees to the Water Quality Division of ADEQ. Please reference the permit number, LTF number and why reduced fees are requested under the rule.

2.1.2 Solid Waste Annual Registration and Disposal Fees [A.R.S. §§ 49-747, 49-836]

The annual registration fee for the solid waste landfills is established by A.R.S. § 49-747 and A.A.C. R18-13-2102 and 2103 (effective July 1, 2012). The solid waste landfill disposal fees are established by A.R.S. § 49-836 based on the amount of waste landfilled. The fees are payable to ADEQ each year.

2.1.3 Financial Capability [A.R.S. § 49-243(N) and A.A.C. R18-9-A203]

The permittee has demonstrated financial capability under A.R.S. § 49-243(N) and A.A.C. R18-9-A203. The permittee shall maintain financial capability throughout the life of the facility. The estimated cost of closure for the APP-regulated facilities is approximately \$56,651,080. The financial assurance mechanism was demonstrated through a financial test for self-assurance per A.A.C. R18-9-A203(C)(1).

2.3 Best Available Control Technology [A.R.S. § 49-243(B) and A.A.C. R18-9-A202(A)(5)]

The best available demonstrated control technology (BADCT) for each discharging facility regulated by the area-wide APP is described in ensuing sections of this permit. In addition to BADCT for each regulated facility, PVNGS relies on engineering and operational controls (including water conservation and reuse) and site characteristics to demonstrate BADCT. Wastewater reclamation and water conservation both contribute to BADCT for the area-wide APP, which regulates discharging facilities across the site. Municipal secondary treated effluent (reclaimed water) received via the Water Reclamation Supply System (WRSS) pipeline from the 91st Avenue and Tolleson Wastewater Treatment Plants (WWTPs) is utilized for process water or cooling water make-up after it has gone through additional, tertiary treatment at the WRF. Treated reclaimed water is discharged to two holding impoundments, the 45-acre WSR and the 85-acre WSR before use as cooling water. Other wastewaters generated at the site are also cycled back and treated for reuse as cooling water. Because the site is located within the Phoenix Active Management Area, cooling water is cycled a minimum of 15 times to meet Arizona Department of Water Resources (ADWR) water conservation requirements. Only after cycling the water for maximum utilization is the spent cooling tower wastewater discharged to the evaporation surface impoundments.

The on-site WRF is an advanced treatment plant, utilizing a multi-phase, chemical treatment process to lower hardness and TDS to allow more cooling cycles. The WRF process includes 6 trickling filters, 6 first-stage solids contact clarifiers, 6 second-stage clarifiers, and 24 gravity filters. PVNGS is currently adding a seventh set of first-stage and second-stage clarifiers in order to have a redundant set so that one set may be taken out of service for repair without decreasing capacity. The WRF treats a combination of reclaimed water from the WRSS Pipeline (also referred to in ADEQ files as the Hassayampa Pipeline), Sewage Treatment Plant effluent, industrial wastewater, and groundwater using tertiary treatment. The WRF also has treatment facilities to provide domestic, demineralized and fire protection water.

2.4 Monitoring Requirements [A.R.S. § 49-243(B) and (K)(1), A.A.C. R18-9-A206(A)]

Unless otherwise specified in this permit, all monitoring required in this permit shall continue for the duration of the permit, regardless of the status of the facility. Monitoring shall commence the first full monitoring period following permit issuance. All sampling, preservation and holding times shall be in accordance with currently accepted standards of professional practice. Trip blanks, equipment blanks and duplicate samples shall also be obtained, and Chain-of-Custody procedures shall be followed, in accordance with currently accepted standards of professional practice. Copies of laboratory analyses and Chain-of-Custody forms shall be maintained at the permitted facility. Upon request, these documents shall be made immediately available for review by ADEQ personnel.

3.0 WATER STORAGE RESERVOIRS

There are two WSRs: the 85-acre WSR and the 45-acre WSR. Both WSRs are synthetic-lined surface impoundments with a leakage collection and recovery system (LCRS). They receive tertiary-treated effluent from the WRF and store it for use as cooling water for the generating station. The following pesticide products may be used provided the use directions from the labels are followed: CFT Legumine Fish Toxicant, Prentox® Prenfish™

Fish Toxicant or a substantively similar rotenone product with ADEQ's written approval, Nalco H-130M Molluscicide, and AS-521 algaecide.

3.1 Water Storage Reservoir Best Available Demonstrated Control Technology [A.R.S. § 49-243(B) and A.A.C. R18-9-A202(A)(5)]

The WSRs are equipped with a double liner system and a leak collection and recovery system (LCRS) installed above an underdrain system. The underdrain system is designed to allow shallow groundwater to be pumped and removed from soils underlying the impoundment to protect the liner system. The following subsections describe the BADCT for each WSR.

3.1.1 85-acre Water Storage Reservoir Best Available Demonstrated Control Technology

The 85-acre WSR is located southeast of the WRF in the northern portion of the property. This impoundment is approximately 85 acres in surface area and is designed to store 756 million gallons of cooling water at a maximum operating elevation of 952.5 feet above mean sea level (amsl).

The 85-acre WSR was rehabilitated and reconstructed and shall be maintained in accordance with ADEQ approved plans and construction specifications received April 3, 2007, and supplemental underdrain system plans and details received June 14, 2007, containing the following design elements:

3.1.1.1 Subgrade Preparation and Earthwork

The subgrade was prepared and compacted in accordance with the Project Construction Specifications, Section 02200, Earthwork, and included trimming, shaping and removal of any existing materials found to be unacceptable for subgrade. The subgrade was free of debris or angular material that could damage the synthetic liner. The subgrade was approved by the Owner and by the lining contractor prior to liner placement activities.

The underlying asphalt membrane from the original reservoir was left in place in areas where the liner was intact and undamaged. The subgrade for the side slope LCRS and any bottom areas of the reservoir where the asphalt membrane was not left in place were compacted to 95 percent maximum dry density as determined by ASTM D698 prior to installation of the liners.

3.1.1.2 Underdrain System Design

An underdrain system was placed around 50 to 70 percent of the WSR perimeter to intercept and drain a potentially saturated sand layer that is located approximately 5 feet above the bottom elevation of the impoundment. This sand layer intercepts the excavation generally from the north and east. The underdrain system consists of a lateral collection trench located at an elevation such that the bottom of the trench varies from 6 inches between let-down trenches to 12 inches at the let-down trenches below bottom of the sand layer. Trenches are of sufficient depth to intercept water draining from the sand layer. The lateral collection trench was lined with a 12-ounce non-woven geotextile and filled with cleaned natural or crushed gravel having a maximum size of 1.5 inches, as determined by ASTM D422, and a maximum of 5 percent passing a 3/8-inch sieve as determined by ASTM D422. The geotextile was placed to completely enclose the gravel with sufficient overlap to prevent migration of the gravel. At approximately 100-foot intervals, or less, a let-down trench was constructed to drain water collected in the lateral trench to a drain trench located 1 foot below the impoundment bottom and the toe of the interior side slope. The lateral trench is sloped to drain to the let-down trenches at 1.0 percent grade. The let-down trenches are a minimum of 2 feet wide, lined with geotextile and filled with gravel in the same manner as the lateral collection trench. The drain trench is a minimum of 1 foot in depth and 2 feet in width with a 6-inch perforated drain pipe encased in gravel. The drain trench was encased in geotextile in the same manner as the lateral drain and let-down trenches. The drain trench was sloped to prevent ponding and to drain to a 6-inch solid pipe laid at a minimum of 1.0 percent slope to convey water from the drain trench to an underdrain collection sump. All trenches and over excavation were backfilled with 8-inch lifts of clayey borrow previously processed to acceptable moisture content and compacted to project specifications.

This system is designed to intersect and recover shallow groundwater beneath the impoundment to prevent the secondary liner system from floating.

3.1.1.3 Liner System Design

The impoundment is double-lined with an LCRS system. The double-liner system consists of a 60-mil HDPE white reflective liner installed above an LCRS, which is installed above a second 60-mil HDPE liner. The liners were installed and welds and seams were tested as indicated in the approved Quality Assurance/Quality Control (QA/QC) Plan and in accordance with the testing requirements for liner warranty. The primary liner is conductive and was tested by electrical detection at the time of installation to verify that the liner was free of holes and pinholes in accordance with the approved QA/QC Plan. The liner system was secured with an engineered trench. The liners are separated by a geonet drainage layer designed to allow any leakage that may pass through anomalies or leaks in the top liner, to flow to a drain pipe which conveys the leakage to three leakage collection sumps and are designed to maintain a minimum slope of 1 percent to the sumps. The drainage layer has a hydraulic conductivity of 10^{-2} centimeters per second (cm/sec), or greater, to promote drainage to the collection sumps. The lower liner is underlain by a 12-ounce non-woven, needle-punched geotextile (minimum average roll value per approved specification). The side slope LCRS, and any other subgrade areas that were rebuilt, were compacted to 95 percent maximum dry density standard proctor. The side slopes of the ponds are 4 Horizontal (H):1 Vertical (V), except in the vicinity of the intake structure, which has a slope of 3H:1V and was part of the previous WSR. The bottom slope is 1 percent toward each of the three collection sumps. The side slopes of the reservoir were armored down from the crest elevation of 955 ft amsl to an approximate elevation of 931 ft amsl. The side slope armoring consists of soil cement and controlled low-strength material (CLSM) at the intake structure, prepared to the construction specifications provided in the application.

3.1.1.4 Storage Capacity and Freeboard

The design holding capacity of the 85-acre impoundment is 756 million gallons, which excludes freeboard. The maximum operational elevation of the 85-acre impoundment is 952.5 feet above mean sea level (amsl). The design flow for the impoundment used in engineering design was 60,000 gallons per minute (GPM) and a peak design flow of 72,000 GPM. The 85-acre WSR has a cross-connection to the 45-acre WSR so that water can be transferred between the WSRs. Freeboard requirements are presented in Section 13.2, Table 13.2-1 Surface Impoundment and BADCT Performance Standard Inspection and Alert Monitoring.

3.1.1.5 Stormwater Containment and Diversion

The calculated freeboard and holding capacity of the impoundment includes containment of the 100-year, 24-hour storm event. Run-on from the 100-year, 24-hour storm event shall be diverted around the impoundment.

3.1.1.6 Wastewater and Liner System Compatibility

All fluids discharged to the lined impoundment shall be compatible with the synthetic liner.

3.1.1.7 Liner Leakage Monitoring System

There are three liner leakage collection sumps in the LCRS. Sump locations are designated in Section 13.2, Table 13.2-2 Evaporation Ponds and Water Storage Reservoirs Flow Rate and LCRS Fluid Level Monitoring Points, of this permit. An electronic or mechanical water level indicator is used to determine the presence of any fluid head in the base of each sump. The collection sumps each have a total volume capacity of 2,250 gallons of storage below the invert of the 8-inch collection pipes. A portable submersible pump will be used to pump fluid from the sump and cycle it back to the pond. The permittee shall measure leakage rates using volumes pumped and compare those rates to the liner leakage ALs in the permit in Section 13.2, Table 13.2-3 WSR and Evaporation Pond LCRS Monitoring Alert Levels. The

leakage collection sumps were designed to collect leakage from the space between the two HDPE liners.

3.1.1.8 Site-specific Characteristics

Site-specific characteristics were not considered as part of the BADCT demonstration for this impoundment.

3.1.1.9 QA/QC and Final Construction Reports and Pre-operational Inspections

A QA/QC Report and Construction Certification, including as-built plans that were sealed by Arizona-registered Professional Engineer, were submitted to ADEQ.

3.1.2 45-acre Water Storage Reservoir Best Available Demonstrated Control Technology

The 45-acre WSR is located east of the WRF in the northern portion of the property. This impoundment is approximately 45 acres in surface area and is designed to store 355 million gallons of cooling water at a maximum operating elevation of 952.5 feet amsl.

The 45-acre WSR was constructed in accordance with ADEQ-approved plans, received August 1, 2005, containing the following design elements:

3.1.2.1 Subgrade Preparation

The native soil subgrade was compacted to a maximum of 95 percent dry density standard proctor (ASTM Method D698). The subgrade was free of debris or angular material that could damage the synthetic liner.

3.1.2.2 Underdrain System Design

An underdrain system was placed along the perimeter of the WSR to intercept and drain a potentially saturated sand layer, which is located approximately 5 feet above the bottom elevation of the impoundment. This sand layer intercepts the excavation generally from the east and south sides. The underdrain system consists of let-down drains constructed of geo-composite that covers the full thickness of the sand layer on the side slope. The full width of a geo-composite sheet was used for each let-down where water was seen to penetrate through the side slope. The geo-composite was installed 1 foot below the soil cement on the side slopes. The geo-composite drains into a drain trench at the toe of the reservoir approximately 1 foot under the liner. The drain trench is a minimum of 1 foot in depth and 2 feet in width with a 4-inch perforated drain pipe encased in cleaned gravel. The drain trench is completely encased in geotextile. The drain trench is sloped to prevent puddling and drains to a 6-inch solid pipe laid at a minimum of 0.5 percent slope to convey water from the drain trench to an underdrain collection sump. All trenches and over excavation were backfilled with 8-inch lifts of clayey borrow processed to acceptable moisture content and compacted to project specifications.

This system is designed to intersect and recover shallow groundwater beneath the impoundment to prevent the secondary liner system from floating.

3.1.2.3 Liner System Design

The double lined system consists of a 60-mil HDPE liner installed above a LCRS and a second 60-mil HDPE liner installed below the LCRS. The liner was installed and welds and seams were tested as indicated in the approved QA/QC Plan and in accordance with the testing requirements for liner warranty. The primary liner is conductive and was tested by electrical detection at the time of installation to verify that the liner is free of holes and pinholes in accordance with the approved QA/QC Plan. The liner system was secured with an engineered trench. The liners are separated by a geonet drainage layer designed to allow any leakage that may pass through anomalies or leaks in the top liner, to flow to a drain pipe which will convey the leakage to leakage collection sumps and are designed to maintain a minimum slope of 1 percent. The drainage layer has a hydraulic conductivity of 10^{-2} cm/sec or greater to promote drainage to the collection sumps. The lower liner is underlain by a soil

liner that was compacted to 95 percent maximum dry density standard proctor. The side slopes of the ponds are 4 H: 1 V and a slope of 1 percent toward the sump.

3.1.2.4 Storage Capacity and Freeboard

The design holding capacity of the 45-acre impoundment is 355 million gallons, which excludes freeboard. The design flow for the impoundment used in engineering design was 60,000 gallons per minute (GPM) and a peak design flow of 72,000 GPM. The 45-acre WSR has a cross-connection to the 85-acre WSR so that water can be transferred between the WSRs. Freeboard requirements are presented in Section 13.2, Table 13.2-1 Surface Impoundment and BADCT Performance Standard Inspection and Alert Monitoring.

3.1.2.5 Stormwater Containment and Diversion

The calculated freeboard and holding capacity of the impoundment includes containment of the 100-year, 24-hour storm event. Run-on from the 100-year, 24-hour storm event shall be diverted around the impoundment.

3.1.2.6 Wastewater and Liner System Compatibility

All fluids discharged to the lined impoundment shall be compatible with the synthetic liner.

3.1.2.7 Liner Leakage Monitoring System

There are two liner leakage collection sumps in the LCRS. Sump locations are designated in Section 13.2, Table 13.2-2 Evaporation Ponds and Waster Storage Reservoirs Flow Rate and LCRS Fluid Level Monitoring Points, of this permit. An electronic or mechanical water level indicator is used to determine the presence of any fluid in the base of each sump. The north and south collection sumps each have a total volume capacity of 2,250 gallons. A portable submersible pump will be used to pump fluid from the sump and cycle it back to the pond. The permittee shall measure leakage rates using volumes pumped and compare those rates to the liner leakage ALs in the permit in Section 13.2, Table 13.2-3 WSR and Evaporation Pond LCRS Monitoring Alert Levels. The leakage collection sumps are designed to collect leakage from the space between the two HDPE liners.

3.1.2.8 Site-specific Characteristics

Site-specific characteristics were not considered as part of the BADCT demonstration for this impoundment.

3.1.2.9 QA/QC Plan, Final Construction Report and Pre-operational Inspections

A QA/QC Report and Construction Certification, including as-built plans, sealed by Arizona-registered Professional Engineer, were submitted to ADEQ.

3.2 Water Storage Reservoir Operational Requirements and Methods

The permittee shall comply with all additional operational and monitoring requirements as described in Section 3.3, Water Storage Reservoir Discharge Limitations and Section 3.4, WSR Monitoring Requirements. The liner systems shall be maintained according to the BADCT design specified in Section 3.1, Water Storage Reservoir Best Available Demonstrated Control Technology.

3.2.1 Leak Collection and Recovery System Operation

Leakage through the primary liner in the impoundment shall be conveyed through a drainage geonet layer to the collection sump(s) for extraction. Leakage monitoring shall be performed on a daily basis by an automated system or, if the automated system is not functioning, by manually or visually ensuring that the fluid level remains below the bottom of the invert on the influent piping. Fluid will be removed using a submersible pump and the flow rate shall be measured by a flow meter, as the fluid is pumped/re-circulated from the sump back into the impoundment. Leakage flow rates shall be calculated based on the amount of liquid removed in gallons per day (GPD) for comparison with alert levels (ALs) specified in Section 13.2, Table 13.2-3 WSR and Evaporation Pond LCRS Monitoring Alert Levels.

3.2.2 Underdrain System Operation

The liner underdrain system shall be used to divert shallow groundwater collecting beneath the double lined liner system to collection sumps. The fluid in the underdrain system collection sumps shall be pumped to maintain the fluid level below the level of the water in WSRs and as needed to protect the liner system. Fluid collected from this system shall be metered as pumped and shall be returned to the storage reservoir in accordance with the requirements of the ADWR groundwater withdrawal permit.

3.3 Water Storage Reservoir Discharge Limitations [A.R.S. §§ 49-201(14), 49-243 and A.A.C. R18-9-A205(B)]

3.3.1 Holding Capacity and Flow Limitations

The total maximum design holding capacity for the 85-acre WSR is 756 million gallons. The total maximum design holding capacity for the 45-acre WSR is 355 million gallons.

3.3.2 Authorized and Unauthorized Materials

The WSRs are designated and authorized for the storage of the materials listed in Section 3.3.3. In the event of liner failure, containment structure failure, unexpected loss of fluid, overtopping or discharge of unauthorized material, refer to Section 3.5.2.3 Discharge of Unauthorized Materials to a WSR, and 9.4 Emergency Response and Contingency Requirements for Unauthorized Discharges. The discharge to the impoundment shall not contain any organic solvents, or hazardous substances (A.R.S. § 49-201(19)) that are not associated with aforementioned routine operations and the authorized waste streams. In the event of an unauthorized discharge or accidental spill, the permittee shall initiate the contingency requirements as described in Sections 3.5.2 WSR Discharge Limitation Violations, 9.3 Discharge Limitations Violations, and 9.4 Emergency Response and Contingency Requirements for Unauthorized Discharges.

3.3.3 Discharge Source Limitations

The WSRs are designated and authorized for the storage of the final treated cooling tower make-up water discharged from the WRF. In addition to the final treated water from the WRF, the WSRs are also authorized to receive: secondary treated effluent from the Sewage Treatment Plant only during emergency upset situations; non-hazardous, low volume wastewaters during WRF outages; and, untreated groundwater. Bypass piping is in place to allow for secondary treated effluent from the WRSS Pipeline to go directly to the WSRs in the event of an emergency situation at the WRF.

3.3.4 Surface Impoundment and Equipment Maintenance

The permittee shall maintain the impoundment to the maximum extent practicable to ensure that there are no liner failures, uncontrollable leaks, overtopping, accidental spills, or other unauthorized discharges into the environment. In the event of a liner failure, overtopping or an unauthorized discharge or accidental spill, the permittee shall initiate the contingency requirements as described in Section 3.5.2.1 Liner Failure, Unexpected Loss of Fluid, or Containment Structure Failure, Section 3.5.2.2 Overtopping of WSR Surface Impoundment, Section 9.3 Discharge Limitation Violations, and Section 9.4 Emergency Response and Contingency Requirements for Unauthorized Discharges, as appropriate.

3.3.5 Use of WSR Fluids for Dust Suppression and Other Surface Applications

This permit authorizes on-site use of treated WRF/WSR water from any discharge point prior to and/or from the WSR for dust suppression, herbicide makeup-water, or other surface applications, based on water quality data provided by the permittee and requirements for dust control under Air Quality Permits. If the character of the treated WRF/WSR water, which is also used for dust suppression or other surface applications, degrades or the source water changes, ADEQ shall be notified immediately and analytical results submitted to ADEQ for review within 30 calendar days. ADEQ approval of effluent from new sources for use in dust suppression or other surface applications shall be dependent on the permittee demonstrating there is no reasonable probability that such use of the effluent will cause or contribute to a violation of AWQS at the applicable POC(s) or further degrade, at the applicable POC(s), the quality of any aquifer that at the time of permit issuance violated the AWQS for that pollutant.

3.4 WSR Monitoring Requirements [A.R.S. § 49-243(K)(1), A.A.C. R18-9-A206(A)]

All monitoring required in this permit, unless otherwise specified, shall continue for the duration of the permit, regardless of the status of the facility and shall be performed in accordance with procedures outlined in this Section and the quality control procedures and record keeping/reporting procedures in Sections 8.5 Groundwater Monitoring and Sampling Protocols, Section 8.6 Analytical Methodology, 10.1 Self-monitoring Report Forms and 10.2 Operation Inspection/Log Book Recordkeeping. All sampling, preservation and holding times shall be in accordance with currently accepted standards of professional practice. Trip blanks, equipment blanks and duplicate samples shall also be obtained, and chain of custody procedures shall be followed, in accordance with currently accepted standards of professional practice. Copies of laboratory analyses and Chain-of-Custody forms shall be maintained at the permitted facility. Upon request, these documents shall be made immediately available for review by ADEQ personnel.

3.4.1 Discharge Monitoring

Routine discharge monitoring is not a condition of this permit for the WSRs.

3.4.1.1 Initial Discharge Characterization

Initial discharge characterization is not required for this facility. An initial discharge characterization was completed as a part of the P-100388 permitting requirements and is on file with ADEQ in records for LTF Number 33138.

3.4.1.2 Routine Discharge Quality Monitoring

Routine discharge monitoring is not required under the terms of this permit.

3.4.1.3 Contingency Discharge Monitoring

Contingency monitoring shall be required in the event of an AL2 exceedance in accordance with Section 3.5.1.2.2 Exceeding of AL2 for Excessive Liner Leakage and Section 13.3, Table 13.3-1 Contingency Leak Collection and Recovery System Monitoring, 85-acre WSR and 45-acre WSR. These sections contain provisions for collection of samples from the LCRS and fluid in the impoundment in the event of an AL2 exceedance.

3.4.2 WSR Facility / Operational Monitoring

3.4.2.1 Water Storage Reservoir Structure Performance Monitoring

During the operation of the impoundment, the operator shall properly maintain and inspect the impoundment according to Section 3.3.4, Surface Impoundment and Equipment Maintenance, and Section 13.2, Table 13.2-1 Surface Impoundment and BADCT Performance Standard Inspection & Alert Monitoring. A log of these inspections shall be kept at the facility for 10 years from the date of each inspection, available for review by ADEQ personnel.

3.4.2.2 Leakage Collection and Recovery System Monitoring

The permittee shall monitor the LCRS for the presence of fluids on a daily basis in accordance with Section 13.2, Table 13.2-2 Evaporation Ponds and Water Storage Reservoirs Flow Rate and LCRS Fluid Level Monitoring Points.

If fluids are collected in the LCRS during use or operation of the impoundment, the permittee shall remove accumulated fluids from the collection sump(s) at a rate necessary to prevent fluids from backing up into the drainage layer. If fluid detected exceeds the ALs specified in Section 13.2, Table 13.2-3 WSR and Evaporation Pond LCRS Monitoring Alert Levels, as applicable, the permittee shall initiate the necessary contingency plan described in Section 3.5 WSR Contingency Plan Requirements.

A log of the monitoring activities and inspection results shall be kept at the facility for 10 years from the date of inspection and available for review by ADEQ personnel as necessary. Results of the LCRS monitoring shall be recorded in the facility logbook (Section 10.2 Operation Inspection/Log Book Recordkeeping) for this permit. AL exceedances shall be

reported to ADEQ according to Section 10.3 Permit Violation and Alert Level Status Reporting.

3.4.2.3 Operational Performance Monitoring

The permittee shall inspect the impoundment for the Performance Standards in Section 13.2, Table 13.2-1 Surface Impoundment and BADCT Performance Standard Inspection & Alert Monitoring and Section 3.5 WSR Contingency Plan Requirements. Contingency Plan Requirements for exceeding freeboard, overtopping, or ALs for liner leakage rates shall be followed by the permittee for the applicable conditions.

3.5 WSR Contingency Plan Requirements [A.R.S. § 49-243(K)(3), (K)(7) and A.A.C. R18-9-A204 and R18-9-A205]

At least one copy of the approved contingency and emergency response plan(s) submitted in the application shall be maintained at the location where day-to-day decisions regarding the operation of the facility are made. The permittee shall be aware of and follow the contingency and emergency plans.

Some contingency actions involve verification sampling. Verification sampling shall consist of the first follow-up sample collected from a location that previously indicated a violation or the exceedance of an AL. Collection and analysis of the verification sample shall use the same protocols and test methods to analyze for the pollutant or pollutants that exceeded an AL or violated an AQL. The permittee is subject to enforcement action for the failure to comply with any contingency actions in this permit. Where verification sampling is specified in this permit, it is the option of the permittee to perform such sampling. If verification sampling is not conducted within the timeframe allotted, ADEQ and the permittee shall presume the initial sampling result to be confirmed as if verification sampling has been conducted. The permittee is responsible for compliance with contingency plans relating to the exceedance of an AL or violation of a DL, AQL or any other permit condition.

3.5.1 WSR Exceeding ALs

3.5.1.1 Exceeding of AL - Freeboard

In the event that freeboard becomes less than the minimum specified in Section 13.2, Table 13.2-1 Surface Impoundment and BADCT Performance Standard Inspection & Alert Monitoring, the permittee shall:

1. Immediately cease discharging to the impoundment to prevent overtopping. Remove, circulate in the system or properly dispose of the excess fluid in the impoundment until the water level is restored at or below the impoundment specific freeboard limit. Record in the facility log/recordkeeping file the amount of fluid removed a description of the removal method, and the disposal arrangements. The facility log/recordkeeping file shall be maintained according to Section 10.2 Operation Inspection/Log Book Recordkeeping.
2. Within 5 business days of discovery of freeboard exceedance, notify ADEQ Groundwater Section of the AL exceedance as specified in Section 10.3 Permit Violation and Alert Level Status Reporting.
3. Within 5 business days of discovery, evaluate the cause of the incident and adjust operational conditions as necessary to avoid future occurrences. Records documenting each freeboard incident and actions taken to correct the problem shall be included in the Annual Report as required in Section 10.4 (Operational, Other or Miscellaneous Reporting) of this permit.
4. Complete all tasks necessary to return the facility to its pre-alert operating conditions. The facility is no longer on alert status once the freeboard is no longer being exceeded.
5. Report according to Section 10.3 Permit Violation and Alert Status Reporting if required by Table 13.2-1 Surface Impoundment and BADCT Performance Standard Inspection & Alert Monitoring.

3.5.1.2 Exceeding of ALs for Leak Collection and Recovery System Monitoring/ Operation

3.5.1.2.1 Exceeding of AL1 for Normal Liner Leakage

If an AL1 as specified in Section 13.2, Tables 13.2-3 WSR and Evaporation Pond LCRS Monitoring Alert Levels has been exceeded, the permittee shall:

1. Within 5 business days of discovery, determine if the fluid in the collection sump is operational/process water from the impoundment by measuring the pH and conductivity of fluids in the impoundment and in the sump to allow direct comparison in water quality.
2. Within 5 business days of discovery, notify ADEQ Groundwater Section, in accordance with Section 10.3 Permit Violation and Alert Level Status Reporting, and include in the notification an assessment of the type of water in the sump based on the measurements taken according to Item (1) listed above.
3. Within 30 business days of discovery, assess the condition of the liner system using visual methods, electrical leak detection, or other methods as applicable.
4. Monitor fluid removal from the LCRS on a daily basis until the daily volume of fluid quantified either remains below AL1 for 30 calendar days, or ADEQ completes a review of a Liner Leakage Assessment Report (Item 6 below) and determines that the permittee must perform repairs, whichever comes first.
5. Within 45 days of discovery of exceeding AL1, the permittee shall submit an initial report to ADEQ Groundwater Section to address problems identified from the initial assessment of the liner system, the source of the fluid, and any remedial actions taken to minimize future occurrences. The report shall include the results of the initial liner evaluation, methods used to locate the leak(s) if applicable, any repair procedures implemented to restore the liner to optimal operational status if required, and other information necessary to minimize the risk of recurrence. If it is necessary to drain the WSR to assess the liner and identify the source of the fluid, this report will also include a schedule for WSR drainage and liner repair.
6. For leakage rates that continue to exceed AL1 and are below AL2, a Liner Leakage Assessment Report shall be included in the next annual report described in Section 10.4.1 Annual Reporting Requirements. The permittee may also submit the Liner Leakage Assessment Report to ADEQ prior to the annual report due date. This Liner Leakage Assessment Report shall be submitted to the ADEQ Groundwater Section.

ADEQ will review the Liner Leakage Assessment Report and may require that the permittee take additional action to address the problems identified from the assessment of the liner and perform other applicable repair procedures as directed by ADEQ, including repairing the liner or addressing and controlling infiltration of non-operational water detected in the LCRS.

3.5.1.2.2 Exceeding of AL2 for Excessive Liner Leakage

If an AL2 specified in Section 13.2, Table 13.2-3 WSR and Evaporation Pond LCRS Monitoring Alert Levels, has been exceeded, the permittee shall:

1. Immediately cease all discharge to the impoundment or redirect the discharge to another impoundment, which does not have an AL2 violation. Within 24 hours, determine if water in the collection sump is operational/process water from the impoundment by measuring the pH and conductivity of fluids contained in the impoundment and in the sump to allow direct comparison in water quality.
2. Within 5 business days of discovery, notify ADEQ Groundwater Section, in accordance with Section 10.3 Permit Violation and Alert Level Status

Reporting and include an assessment regarding the type of fluid in the sump based upon the measurements taken according to Item (1) listed above.

3. Within 5 business days of discovery, collect samples from the liquid contained in the collection sump and analyze the samples in accordance with Section 13.3, Table 13.3-1 Contingency Leak Collection and Recovery System Monitoring, 85-acre WSR and 45-acre WSR. Within 30 calendar days of discovering an AL2 exceedance, submit the analytical data to the ADEQ Groundwater Section.
4. Within 5 business days of discovery, initiate removing or transferring fluid from the impoundment to an alternate impoundment or offsite disposal location as needed to control elevation and isolate the suspected location of the leak, and within 30 business days of discovery, identify the location of the leak(s) using visual methods, electrical leak detection, or other methods as applicable. If unable to locate the leak within this time-frame, notify ADEQ and continue to take actions to identify the leak and reduce inventory in the impoundment until leak is located.
5. Within 45 calendar days of discovering an AL2 exceedance, submit a report to ADEQ as specified in Section 10.3 Permit Violation and Alert Level Status Reporting. Upon review of the report, ADEQ may request additional monitoring or remedial actions.
6. Within 60 calendar days of discovering an AL2 exceedance, submit for approval to ADEQ, a corrective action plan to address all problems identified from the assessment of the liner system. If unable to locate the leak and complete the plan within the required time-frame, notify ADEQ and provide a schedule for identifying the leak and completing the report. At the direction of ADEQ, the permittee shall implement the approved plan.
7. Within 30 calendar days of being directed to implement the approved plan by ADEQ, repair any leaks identified in Item (4) above and perform all approved corrective actions. For any significant repairs identified by the permittee in the corrective action plan that may require more than 30 days to complete, the permittee may request and ADEQ may consider the request to extend the timeframe for completion of corrective actions and submit reports in accordance with Section 9.5, Corrective Actions.
8. Within 30 calendar days of completion of corrective actions, submit to ADEQ, a written report as specified in Section 9.5 Corrective Actions.

3.5.1.3 Exceeding Operational Performance Alert Levels

If any performance standard set in Section 13.2, Table 13.2-1 Surface Impoundment and BADCT Performance Standard Inspection & Alert Monitoring, has been exceeded, the permittee shall within 5 business days of discovery, implement a corrective action plan, which includes the following:

1. Reduce or cease discharge to the impoundment, as necessary to perform repairs.
2. Implement necessary repair or maintenance works on structures or equipment to restore it to proper operational or working conditions.
3. Remove from banks any excessive vegetative growth, which may cause cracks or damage to the impoundment and liner system.
4. Maintain a log of all repair work on site for inspection by ADEQ in accordance with Section 10.2 Operation Inspection/Log Book Recordkeeping. Records documenting each incident and actions taken to correct the problem shall be included in the Annual Report as required in Section 10.4 (Operational , Other or Miscellaneous Reporting) of this permit.
5. Complete all tasks necessary to return the facility to its pre-alert operating condition. The facility is no longer on alert status once the operational indicator no longer indicates that a Performance AL is being exceeded.

3.5.2 WSR Discharge Limitation Violations

3.5.2.1 Liner Failure, Unexpected Loss of Fluid, or Containment Structure Failure

If there is unexpected loss of fluid in the impoundment(s); any failure of a containment structure, or leakage through the liner system of a surface impoundment, such that fluids are released to the vadose zone, the permittee shall take the following actions:

1. Immediately cease all discharges to the surface impoundment as necessary to prevent any further releases to the environment.
2. Within 5 business days of discovery, notify ADEQ Groundwater Section in writing according to Section 10.3 Permit Violation and Alert Level Status Reporting.
3. Within 5 business days of discovery of a failure that resulted in a release to the subsurface, collect representative samples of the fluid remaining in the surface impoundment. Samples shall be analyzed for the parameters specified in Section 13.3, Table 13.3-1 Contingency Leak Collection and Recovery System Monitoring, 85-acre WSR and 45-acre WSR. Within 30 days of the discovery, submit a copy of the analytical results to the ADEQ Groundwater Section.
4. Within 5 days of discovery, initiate an evaluation to determine the cause of the incident. Identify the circumstances that resulted in the failure and assess the condition of the impoundment and liner system. Implement any corrective actions necessary to resolve the problems identified in the evaluation. The permittee shall not resume discharging to the affected surface impoundment until repairs of any failed liner or structure are performed. Repair procedures, methods, and materials used to restore the system(s) to proper operating condition shall be described in the Facility Logbook/recordkeeping file and available to ADEQ for review.
5. Within 30 days of discovery, initiate removal and disposal of any fluid remaining in the impoundment as necessary to prevent further releases to the subsurface and/or as necessary to perform repairs. Record in the facility log/recordkeeping file the amount of fluid removed, a description of the removal method and other disposal arrangements. The facility log shall be maintained according to Section 10.2 Operation Inspection/Log Book Recordkeeping.
6. If the permittee finds that leakage from the impoundment can be stopped by fluid elevation control, the permittee shall establish and maintain the required freeboard elevation below the identified leakage area within 30 calendar days of identifying the elevation of the leak. The permittee shall not discharge above the newly required freeboard elevation of the affected impoundment until repairs of any failed liner or structure are performed. Within 60 calendar days of identifying the leak location, the permittee shall initiate repairs to the impoundment or liner as necessary to restore proper functioning of the impoundment and return the facility to compliance with this permit, or remove the impoundment from service as specified in Section 11.1 Temporary Cessation, and Section 11.2 Closure, and submit an application to amend this permit to reflect the change in status. Repair procedures, methods, and materials used to restore the reservoir to proper operating condition shall be described in the facility log/recordkeeping file and available to ADEQ for review.
7. If the permittee finds that the affected impoundment must be emptied completely to perform repairs after the cessation of discharge (in Item 1 above), initial required evaluation (in Item 4 above) and liquid depth reduction (in Items 5 and 6 above), the permittee shall remove all excess wastewater within 30 calendar days of identifying the leak. The permittee shall not resume discharging to the reservoir until repairs of any failed liner or structure are performed. Within 60 calendar days of removing excess fluid, the permittee shall initiate repairs or remove the impoundment from service as specified in Section 11.1 Temporary Cessation, and Section 11.2 Closure, and submit an application to amend this permit to reflect the change in status. Repair procedures, methods, and materials used to restore the reservoir to proper operating condition shall be described in the facility log/recordkeeping file and available to ADEQ for review.
8. Within 45 calendar days of discovery of the incident, submit a report to ADEQ as specified in Section 10.3 Permit Violation and Alert Level Status Reporting. Include a description of the actions performed in Items (1) through (7) listed above. Upon review

of the report, ADEQ may request additional monitoring or remedial actions. For a condition lasting more than 90 calendar days, routine status reports shall be provided to ADEQ as required in Section 10.3, Permit Violation and Alert Level Status Reporting.

9. Within 60 calendar days of discovery, conduct an assessment of the impacts to the subsoil and/or groundwater resulting from the incident. Any assessment of potential groundwater contamination shall include an updated well inventory, groundwater contour maps and direction of and velocity of groundwater flow, connection between the shallow and regional groundwater and the potential impacts to the regional aquifer. If soil or groundwater is impacted, submit a corrective action plan to ADEQ within 90 calendar days of discovery, to address problems identified in the assessment, including identification of releases to the environment, remedial actions and/or monitoring, and a schedule for completion of activities. At direction of ADEQ, the permittee shall implement the approved plan.
10. Within 30 calendar days of completion of corrective actions, submit to ADEQ, a written report as specified in Section 9.5 Corrective Actions.
11. Upon review of the submitted report, ADEQ may require additional monitoring, increased frequency of monitoring, amendments to permit conditions or other actions, including installation of additional wells at the POC.

3.5.2.2 Overtopping of WSR Surface Impoundment

If overtopping of fluid from the impoundment occurs, the permittee shall:

1. Immediately cease all discharges to the surface impoundment, to prevent any further releases to the environment.
2. Within 5 business days of discovery, notify the ADEQ Groundwater Section of the overtopping event in writing in accordance with Section 10.3 Permit Violation and Alert Level Status Reporting.
3. Within 5 business days of discovery, collect representative samples of the discharged fluid and the fluid contained in the overtopped impoundment for use in assessing potential subsurface impact. Discharged fluid samples shall be collected from the locations specified in Section 13.3, Table 13.3-2 Plant Upset Releases – Contingency Characterization, Unlined Ditches & Sedimentation Basins 1 and 2 Sample Collection Locations that are impacted by the spill, and analyzed for the parameters specified in Section 13.3, Table 13.3-3 Contingency Plant Upset and Overtopping Releases to Unlined Facilities Sampling.
4. Within 5 business days of discovery, initiate the removal, re-circulation, transference to another impoundment or proper disposal of excess fluid in the impoundment until the fluid level is restored at or below the required freeboard. Record in the facility logbook the amount of fluid removed, a description of the removal method, and the disposal arrangements. The facility logbook shall be maintained according to Section 10.2 Operation Inspection/Logbook Recordkeeping.
5. Within 30 calendar days of discovery, evaluate the cause of the overtopping and identify the circumstances that resulted in the incident. Implement corrective actions and adjust operational conditions as necessary to resolve the problems identified in the evaluation. Repair any systems as necessary to prevent future occurrences of overtopping.
6. Within 45 calendar days of discovery of overtopping, submit a report to ADEQ Groundwater Sections as specified in Section 10.3 Permit Violation and Alert Level Status Reporting, including the analytical results of sample(s) collected in the impoundment. Include a description of the actions performed in Items (1) through (5) listed above. Upon review of the report, ADEQ may request additional monitoring or remedial actions.
7. Within 60 calendar days of discovery, conduct an assessment of the impacts to the subsoil and/or groundwater resulting from the incident. If soil or groundwater is impacted, submit to ADEQ, for approval, a corrective action plan to address problems identified in the assessment, including identification of releases to the environment, remedial actions and/or monitoring, and a schedule for completion of activities. At the direction of ADEQ, the permittee shall implement the approved plan. Any assessment of potential groundwater contamination shall include an updated well inventory,

groundwater contour maps and direction of and velocity of groundwater flow, connection between the shallow and regional groundwater and the potential impacts to the regional aquifer.

8. Within 30 calendar days of completion of all required corrective actions, submit to ADEQ, a written report as specified in Section 9.5 Corrective Actions. Upon review of the submitted report, the Department may require additional monitoring, increased frequency of monitoring, amendments to permit conditions or other actions.

3.5.2.3 Discharge of Unauthorized Materials to a WSR

Authorized discharges are specified in Section 3.3, Water Storage Reservoir Discharge Limitations. If any unauthorized materials are discharged to a WSR, the permittee shall:

1. Immediately cease all unauthorized discharges to the impoundment.
2. Within 5 business days of discovery, notify the ADEQ Groundwater Section in writing in accordance with Section 10.3 Permit Violation and Alert Level Status Reporting.
3. Within 5 business days of discovery, identify the source of the material and determine the cause for the discharge. Evaluate the discharge to determine if it is compatible with the impoundment liner. Based on the evaluation of the incident, repair any systems or equipment and/or adjust operations, as necessary to prevent future occurrences of unauthorized discharges.
4. Within 45 calendar days of discovering a discharge of unauthorized materials to the impoundment, submit a report to ADEQ as specified in Section 10.3 Permit Violation and Alert Level Status Reporting. Include a description of the actions performed in 1 through 3 listed above. Upon review of the report, ADEQ may request additional monitoring or remedial actions.
5. Within 60 calendar days of discovery, if soil or groundwater is impacted, submit a corrective action plan to ADEQ. The corrective action plan shall address problems identified in the assessment, including identification of releases to the environment, remedial actions and/or monitoring, and a schedule for completion of activities. At the direction of ADEQ, the permittee shall implement the approved plan.
6. Within 30 calendar days of completion of corrective actions, submit to ADEQ, a written report as specified in Section 9.5 Corrective Actions. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, or other actions.

3.6 WSR Closure Plan [A.R.S. §§ 49-243(K)(6), 49-252 and A.A.C. R18-9-A209(B)]

Within 90 calendar days following notification of closure, the permittee shall submit for approval to the Groundwater Section, a detailed Closure Plan which meets the requirements of A.R.S. § 49-252 and A.A.C. R18-9-A209(B)(3). Furthermore, at a minimum the plan shall include the following specific activities and data documenting that the activities have been completed:

1. Removal of remaining water from the WSR through evaporation.
2. Characterization and removal of any sludge or sediments from the WSR.
3. Removal of the composite liner system and LCRS components, and disposal of the materials in an approved landfill. The liners and the depositional material shall be disposed of in accordance with state and federal requirements.
4. Demolition of the concrete structures associated with the WSR to a level approximately 3 feet below grade and backfill with soil materials.
5. Sampling and testing the soils beneath the composite liner system in the WSR as needed to demonstrate compliance with established Soil Remediation Levels (SRLs) and as required to demonstrate that there are no concentrations of contaminants remaining in the vadose zone that may cause or contribute to a violation of an AWQS at the applicable POC after closure. Remove and appropriately dispose of soils with concentrations above the applicable SRLs as needed to attain clean closure.
6. Re-grading and re-vegetating the WSR area to prevent ponding of water on the cap or floating of underlying closed in place liner materials.

If the closure plan achieves clean closure immediately, ADEQ shall issue a letter of approval to the permittee. If the closure plan contains a schedule for bringing the facility to a clean closure configuration at a future date,

ADEQ may incorporate any part of the schedule as an amendment to this permit. Closure planning assumes that the depth to saturated soils has sufficiently declined at the time of closure that operation of the underdrain system is no longer needed to prevent impact to the liner system.

4.0 EVAPORATION POND

There are three evaporation ponds: Evaporation Pond 1, Evaporation Pond 2, and Evaporation Pond 3. All evaporation ponds are synthetic-lined wastewater impoundments with LCRSs. They receive cooling tower blowdown and wastewater from the generating units.

4.1 Evaporation Ponds Best Available Demonstrated Control Technology [A.R.S. § 49-243(B) and A.A.C. R18-9-A202(A)(5)]

The evaporation ponds are equipped with a double liner system and a leak collection and recovery system (LCRS).

4.1.1 Evaporation Pond 1

Evaporation Pond 1 is a double-lined wastewater impoundment, constructed above-grade. The impoundment is divided into 3 cells 1A, 1B and 1C. BADCT consists of a 60-mil HDPE liner installed above a LCRS, a secondary 60-mil HDPE liner below the LCRS and above a geosynthetic clay liner (GCL) placed over the prepared sub-base.

The impoundment was constructed in accordance with ADEQ-approved plans, received on July 24, 2011, containing the following design elements:

4.1.1.1 Subgrade Preparation and Earthwork

The subgrade was prepared and compacted in accordance with the Project Construction Specifications, Section 02200, Earthwork, which included trimming, shaping and removal of any existing materials found to be unacceptable for subgrade. After trimming, shaping, and removal of any materials determined to be unsuitable, the subgrade below the limits of the embankment structural fill, was scarified to an approximate depth of 10 to 12 inches (or as needed) to achieve a 6-inch compacted subgrade, and was compacted to a maximum of 95 percent dry density standard proctor (ASTM Method D698). The internal side slopes of the ponds are 4 (H): 1 (V).

4.1.1.2 Underdrain System Design

This section is not applicable.

4.1.1.3 Liner System Design

A double-lined system was installed in Pond 1 cells 1A, 1B, and 1C consisting of a 60-mil HDPE liner installed above a LCRS, a second 60-mil HDPE liner installed below the LCRS, and a GCL below the second 60-mil liner.

During construction, sludge material removed from Pond 1 was transferred to another evaporation pond cell.

The HDPE liners were installed and welds and seams tested as indicated in the approved Construction Quality Assurance (CQA) Plan and in accordance with the testing requirements for liner warranty. The primary liner is conductive and was tested by electrical detection at the time of installation to verify that the liner was free of holes and pinholes in accordance with the approved CQA Plan. The liner system was secured with an engineered trench.

The HDPE liners are separated by a geonet drainage layer installed at a 0.4 to 1.2 percent slope and designed to allow any leakage that may pass through anomalies or leaks in the top liner, to flow to a drain pipe which will convey the leakage to leak collection sumps. The collection pipes have a slope of 0.4 to 1.2 percent. The drainage layer achieves a hydraulic conductivity of 1×10^{-2} cm/sec or greater to promote drainage to the collection sumps.

The lower HDPE liner, which was underlain by a GCL having a permeability of 5×10^{-9} cm/sec, was prepared and installed in accordance with the Project Construction

Specifications Section 02779. The active ingredient of the GCL is natural sodium bentonite, which is encapsulated between two needle-punched geotextiles. The GCL was installed in a manner to ensure it was not damaged, and if any part of the GCL became hydrated prior to the placement of the overlying geomembrane the hydrated section of the GCL was removed and replaced prior to continuing with construction.

4.1.1.4 Storage Capacity and Freeboard

The design holding capacity of the 250- acre impoundment measured at the maximum water level is 1,700 million gallons, which excludes freeboard. The maximum operating elevation for each of the cells is 937 feet amsl.

4.1.1.5 Stormwater Containment and Diversion

The calculated freeboard and holding capacity of the impoundment includes containment of the Probable Maximum Precipitation (PMP) according to United States Army Corps of Engineers Hydrometeorological Report No.49. Run-on from the 100-year, 24-hour storm event shall be diverted around the impoundment. Freeboard requirements are presented in Section 13.2, Table 13.2-1 Surface Impoundment and BADCT Performance Standard Inspection and Alert Monitoring.

4.1.1.6 Wastewater and Liner System Compatibility

All solutions discharged to the lined impoundment shall be compatible with the synthetic liner.

4.1.1.7 Liner Leakage Monitoring System

An electronic, mechanical or visual water level indicator shall be used to determine the presence of any fluid in the base of the sumps for each cell. Each collection sump for Pond 1 has a total volume capacity of 2,250 gallons below the invert of the collection pipes.

The permittee shall have available portable submersible pump(s) with a generator, or dedicated pump(s) with sufficient capacity to pump ahead of the daily liner leakage inflow to the LCRS sump. Pumps shall be properly sized and operated to ensure that the wastewater surface within the collection sump does not exceed the invert elevation of the incoming collection pipe.

Pumps placed in the collection sumps shall be used to remove fluid from the sumps and ensure that pumpage rates are greater than liner leakage rates, according to Section 13.2, Table 13.2-3 WSR and Evaporation Pond LCRS Monitoring Alert Levels. Totalizing flow meters shall be used to record daily flow rates in sumps during pumpage. The leakage collection sumps shall be designed to collect leakage from the space between the two HDPE liners and pumping systems sized and operated to minimize hydraulic head on the secondary liners and to prevent sump overflow.

4.1.1.8 Specific Characteristics

Site-specific characteristics were not used as part of the BADCT demonstration for this impoundment.

4.1.1.9 QA/QC and Final Construction Reports and Pre-operational Inspections

A QA/QC Report and Construction Certification, including as-built plans that are sealed by an Arizona-registered Professional Engineer, were submitted to ADEQ on April 23, 2014 in accordance with Section 12.2, Completed Compliance Schedule Items.

4.1.2 Evaporation Pond 2

Evaporation Pond 2 is a double-lined wastewater impoundment, constructed above-grade. The impoundment is divided into 3 cells 2A, 2B and 2C. BADCT consists of a 60-mil HDPE liner installed above a LCRS, a secondary 60-mil HDPE liner below the LCRS and above a geosynthetic clay liner (GCL) placed over the prepared sub-base.

The impoundment was constructed in accordance with ADEQ-approved plans, received on July 17, 2009, containing the following design elements:

4.1.2.1 Subgrade Preparation and Earthwork

The subgrade was prepared and compacted in accordance with the Project Construction Specifications, Section 02200, Earthwork, which included trimming, shaping and removal of any existing materials found to be unacceptable for subgrade. After trimming, shaping, and removal of any materials determined to be unsuitable, the subgrade below the limits of the embankment structural fill, was scarified to an approximate depth of 10 to 12 inches (or as needed) to achieve a 6-inch compacted subgrade, and compacted to a maximum of 95 percent dry density standard proctor (ASTM Method D698). The internal side slopes of the ponds are 4 (H): 1 (V).

4.1.2.2 Underdrain System Design

This section is not applicable.

4.1.2.3 Liner System Design

A double-lined system was installed in Pond 2 cells 2A, 2B, and 2C consisting of a 60-mil HDPE liner installed above a LCRS, a second 60-mil HDPE liner installed below the LCRS, and a GCL below the second 60-mil liner. An additional layer of geonet and geotextile may be installed above the primary liner in cell 2C for dust control, if needed.

The HDPE liners were installed and welds and seams tested as indicated in the approved Construction Quality Assurance (CQA) Plan and in accordance with the testing requirements for liner warranty. The primary liner is conductive and was tested by electrical detection at the time of installation to verify that the liner is free of holes and pinholes in accordance with the approved CQA Plan. The liner system was secured with an engineered trench.

The HDPE liners are separated by a geonet drainage layer installed at a 0.4 to 1.2 percent slope and designed to allow any leakage that may pass through anomalies or leaks in the top liner, to flow to a drain pipe which will convey the leakage to leak collection sumps. The collection pipes have a slope of 0.4 to 1.2 percent. The drainage layer achieves a hydraulic conductivity of 1×10^{-2} cm/sec or greater to promote drainage to the collection sumps.

The lower HDPE liner, which was underlain by a GCL having a permeability of 5×10^{-9} cm/sec, was prepared and installed in accordance with the Project Construction Specifications Section 02779. The active ingredient of the GCL is natural sodium bentonite, which is encapsulated between two needle-punched geotextiles. The GCL was installed in a manner to ensure it is not damaged, and any part of the GCL hydrated prior to the placement of the overlying geomembrane the hydrated section of the GCL was removed and replaced prior to continuing with construction.

4.1.2.4 Storage Capacity and Freeboard

The design holding capacity of the 223-acre impoundment measured at the maximum water level is 1,714 million gallons, which excludes freeboard. The maximum operating elevation of the impoundment is 937 feet amsl.

4.1.2.5 Stormwater Containment and Diversion

The calculated freeboard and holding capacity of the impoundment includes containment of the 100-year, 24-hour storm event. Run-on from the 100-year, 24-hour storm event shall be diverted around the impoundment. Freeboard requirements are presented in Section 13.2, Table 13.2-1 Surface Impoundment and BADCT Performance Standard Inspection and Alert Monitoring.

4.1.2.6 Wastewater and Liner System Compatibility

All solutions discharged to the lined impoundment shall be compatible with the synthetic liner.

4.1.2.7 Liner Leakage Monitoring System

An electronic, mechanical, visual water level indicator shall be used to determine the presence of any fluid in the base of the sumps for each cell. The east and west collection sumps for 2A have a total volume capacity of 2,250 gallons below the invert of the collection pipes. The 2B/2C West and 2B East collection sumps have a total volume capacity of 2,250 gallons below the invert of the collection pipes.

The permittee shall have available portable submersible pump(s) with a generator, or dedicated pump(s) with sufficient capacity to pump ahead of the daily liner leakage inflow to the LCRS sump. Pumps shall be properly sized and operated to ensure that the wastewater surface within the collection sump does not exceed the invert elevation of the incoming collection pipe.

Pumps placed in the collection sumps shall be used to remove fluid from the sumps and ensure that pumpage rates are greater than liner leakage rates, according to Section 13.2, Table 13.2-3 WSR and Evaporation Pond LCRS Monitoring Alert Levels. Totalizing flow meters shall be used to record daily flow rates in sumps during pumpage. The leakage collection sumps shall be designed to collect leakage from the space between the two HDPE liners and pumping systems sized and operated to minimize hydraulic head on the secondary liners and to prevent sump overflow.

4.1.2.8 Specific Characteristics

Site-specific characteristics were not used as part of the BADCT demonstration for this impoundment.

4.1.2.9 QA/QC and Final Construction Reports and Pre-operational Inspections

A QA/QC Report and Construction Certification, including as-built plans that are sealed by an Arizona-registered Professional Engineer, was submitted to ADEQ on November 7, 2011 in accordance with Section 12.1, Active Compliance Schedule Items.

4.1.3 Evaporation Pond 3

Evaporation Pond 3 is a double lined wastewater impoundment, constructed above-grade. The impoundment is divided into two cells 3A and 3B. BADCT consists of a 60-mil HDPE liner installed above an LCRS, a secondary 60-mil HDPE liner below the LCRS and above a GCL placed over the prepared sub-base.

The impoundment was constructed in accordance with ADEQ-approved plans, received on December 3, 2007, containing the following design elements:

4.1.3.1 Subgrade Preparation and Earthwork

The subgrade was prepared and compacted in accordance with the Project Construction Specifications, Section 02200, Earthwork, which included trimming, shaping and removal of any existing materials found to be unacceptable for subgrade. After trimming, shaping, and removal of any materials determined to be unsuitable, the subgrade below the limits of the embankment structural fill, was scarified to an approximate depth of 10 to 12 inches (or as needed) to achieve a 6-inch compacted subgrade, and compacted to a maximum of 95 percent dry density standard proctor (ASTM Method D698). The internal side slopes of the ponds are 4 (H): 1 (V).

4.1.3.2 Underdrain System Design

This section is not applicable.

4.1.3.3 Liner System Design

A double-lined system was installed consisting of a 60-mil HDPE liner installed above a LCRS, a second 60-mil HDPE liner installed below the LCRS, and a GCL below the second 60-mil liner.

The HDPE liners were installed and welds and seams tested as indicated in the approved Construction Quality Assurance (CQA) Plan and in accordance with the testing requirements for liner warranty. The primary liner is conductive and was tested by electrical detection at the time of installation to verify that the liner is free of holes and pinholes in accordance with the approved CQA Plan. The liner system was secured with an engineered trench.

The HDPE liners are separated by a geonet drainage layer installed at a 0.4 to 1.2 percent slope and designed to allow any leakage that may pass through anomalies or leaks in the top liner, to flow to a drain pipe which will convey the leakage to leak collection sumps. The collection pipes have a slope of 0.4 to 1.2 percent. The drainage layer achieves a hydraulic conductivity of 1×10^{-2} cm/sec or greater to promote drainage to the collection sumps.

The lower HDPE liner, which was underlain by a GCL having a permeability of 5×10^{-9} cm/sec, was prepared and installed in accordance with the Project Construction Specifications Section 02779. The active ingredient of the GCL is natural sodium bentonite, which is encapsulated between two needle-punched geotextiles. The GCL was installed in a manner to ensure it is not damaged, and any part of the GCL hydrated prior to the placement of the overlying geomembrane the hydrated section of the GCL was removed and replaced prior to continuing with construction.

4.1.3.4 Storage Capacity and Freeboard

The design holding capacity of the impoundment measured at the maximum water level is 2,132 million gallons, which excludes freeboard. The maximum operating elevation is 937 feet amsl.

4.1.3.5 Stormwater Containment and Diversion

The calculated freeboard and holding capacity of the 180-acre impoundment includes containment of the 100-year, 24-hour storm event. Run-on from the 100-year, 24-hour storm event shall be diverted around the impoundment. Freeboard requirements are presented in Section 13.2, Table 13.2-1 Surface Impoundment and BADCT Performance Standard Inspection and Alert Monitoring.

4.1.3.6 Wastewater and Liner System Compatibility

All solutions discharged to the lined impoundment shall be compatible with the synthetic liner.

4.1.3.7 Liner Leakage Monitoring System

An electronic, mechanical, or visual water level indicator shall be used to determine the presence of any fluid in the base of the sumps for each cell. The east and west collection sumps for 3A have a total volume capacity of 2,250 gallons below the invert of the collection pipes. The east and west collection sumps of 3B have a total volume capacity of 2,250 gallons below the invert of the collection pipes.

The permittee shall have available portable submersible pump(s) with a generator, or dedicated pump(s) with sufficient capacity to pump ahead of the daily liner leakage inflow to the LCRS sump. Pumps shall be properly sized and operated to ensure that the wastewater surface within the collection sump does not exceed the invert elevation of the incoming collection pipe.

Pumps placed in the collection sumps shall be used to remove fluid from the sumps and ensure that pumpage rates are greater than liner leakage rates, according to Section 13.2, Table 13.2-3 WSR and Evaporation Pond LCRS Monitoring Alert Levels. Totalizing flow meters shall be used to record daily flow rates in sumps during pumpage. The leakage collection sumps shall be designed to collect leakage from the space between the two HDPE liners and pumping systems sized and operated to minimize hydraulic head on the secondary liners and to prevent sump overflow.

4.1.3.8 Specific Characteristics

Site-specific characteristics were not used as part of the BADCT demonstration for this impoundment.

4.1.3.9 QA/QC and Final Construction Reports and Pre-operational Inspections

A QA/QC Report and Construction Certification, including as-built plans that are sealed by an Arizona-registered Professional Engineer, were submitted to ADEQ on November 24, 2009 in accordance with Section 12.1, Active Compliance Schedule Items.

4.2 Evaporation Pond Operational Requirements and Methods

Leakage through the primary liner in the impoundments shall be conveyed through a drainage geonet layer to the collection sump(s) for extraction. Fluid will be removed using a portable submersible pump and the pumping rate recorded and the daily flow rate shall be measured by a totalizing flow meter, as the leakage is pumped/re-circulated back into the impoundment. The collection sump and leakage removal pump shall be sized, operated and maintained to prevent liner leakage, to prevent overtopping of the LCRS sump and to maintain flow to the LCRS sump.

If damage is identified during an inspection that could cause or contribute to a discharge, proper repairs shall be promptly performed. The permittee shall comply with all additional operational and monitoring requirements as described in Section 4.3, Evaporation Pond Discharge Limitations, and Section 4.4, Evaporation Pond Monitoring Requirements. The liner system for each impoundment shall be maintained according to the BADCT design specified in Section 4.1, Evaporation Ponds Best Available Demonstrated Control Technology.

4.2.1 Underdrain System Operation

This section is not applicable.

4.3 Evaporation Pond Discharge Limitations [A.R.S. §§ 49-201(14), 49-243 and A.A.C. R18-9-A205(B)]

4.3.1 Holding Capacity and Flow Limitations

The total maximum design holding capacity for Evaporation Pond 1 is 1,700 million gallons. The total maximum design holding capacity for Evaporation Pond 2 is 1,714 million gallons. The total maximum design holding capacity for Evaporation Pond 3 is 2,132 million gallons.

4.3.2 Authorized and Unauthorized Materials

The evaporation ponds are designated and authorized for the storage of the materials listed in Section 4.3.3. In the event of liner failure, containment structure failure, unexpected loss of fluid, overtopping or discharge of unauthorized material, refer to Section 4.5.2 Discharge Limitations Violations, and Section 9.4, Emergency Response and Contingency Requirements for Unauthorized Discharges. The discharge to the impoundments shall not contain any organic solvents, or hazardous substances (A.R.S. § 49-201(19)) that are not associated with aforementioned routine operations and the authorized waste streams. In the event of an unauthorized discharge or accidental spill, the permittee shall initiate the contingency requirements as described in Section 4.5, Evaporation Pond Contingency Plan Requirements and Section 9.4, Emergency Response and Contingency Requirements for Unauthorized Discharges.

Fluids from any APP-regulated pond may be discharged to the evaporation ponds as part of maintenance, repair, or contingency response actions. Sludge, soil and unrecyclable liner resulting from the re-lining of any APP-regulated pond may be placed in either Evaporation Pond 1C or Evaporation Pond 2C

4.3.3 Discharge Source Limitations

The Evaporation Ponds are designated and authorized for the storage and evaporation of circulating water system blowdown from the three generating units and nine cooling towers, any non-hazardous wastewater from the WRF, any non-hazardous wastewater from other PVNGS sources, and sludge, soil and unrecyclable liner material resulting from the re-lining of any APP-regulated facility in either Evaporation Pond 1C or Evaporation Pond 2-C.

4.3.4 Surface Impoundment and Equipment Maintenance

The permittee shall maintain the impoundment to the maximum extent practicable to ensure that there are no liner failures, uncontrollable leaks, overtopping, berm breaches, accidental spills, or other unauthorized discharges into the environment. In the event of an unauthorized discharge or accidental spill, the permittee shall initiate the contingency requirements as described in Section 4.5, Evaporation Pond Contingency Plan Requirements and Section 9.4, Emergency Response and Contingency Requirements for Unauthorized Discharges.

In the event of liner failure, containment structure failures, unexpected loss of fluid, overtopping or discharge of unauthorized material refer to Section 4.5.2. Discharge Limitations Violations, and Section 13.4 Emergency Response and Contingency Requirements for Unauthorized Discharges.

4.4 Evaporation Pond Monitoring Requirements

All monitoring required in this permit, unless otherwise specified, shall continue for the duration of the permit, regardless of the status of the facility and shall be performed in accordance with procedures outlined in this Section and the quality control procedures and record keeping/reporting procedures in Sections 8.5 Groundwater Monitoring and Sampling Protocols, Section 8.6 Analytical Methodology, 10.1 Self-monitoring Report Forms and 10.2 Operation Inspection/Log Book Recordkeeping. All sampling, preservation and holding times shall be in accordance with currently accepted standards of professional practice. Trip blanks, equipment blanks and duplicate samples shall also be obtained, and chain of custody procedures shall be followed, in accordance with currently accepted standards of professional practice.

4.4.1 Discharge Monitoring [A.R.S. § 49-243(K)(1), A.A.C. R18-9-A206(A)]

Routine discharge monitoring is not a condition of this permit. Contingency monitoring shall be performed in the event of an AL 2 exceedance in accordance with Section 4.5.1.2.2, Exceeding of AL2 for Excessive Liner Leakage.

4.4.1.1 Initial Discharge Characterization

An initial wastewater discharge characterization was completed as part of APP P100388 permitting requirements. Processes which create the wastewater that is discharged to the evaporation pond system have not changed since Evaporation Ponds 1 and 2 were permitted under the area-wide APP Inventory Number 100388. The same wastewater will be directed to all of the evaporation ponds. Initial discharge characterization for discharge to any of the evaporation ponds is not required for this permit.

4.4.1.2 Routine Discharge Quality Monitoring

Routine discharge monitoring is not required under the terms of this permit.

4.4.1.3 Contingency Discharge Monitoring

Section 4.5.1.2.2, Exceeding of AL2 for Excessive Liner Leakage, contains provisions for collection of contingency samples from the LCRS sumps and wastewater in the impoundment in the event of an AL2 exceedance. Wastewater samples shall be collected at the locations designated in Section 13.3 Table 13.3-4 Evaporation Ponds Contingency Wastewater Sampling Locations for Overtopping of the Surface Impoundment, and characterized for the parameters in Table 13.3-5 Evaporation Ponds Contingency Wastewater and LCRS Fluid Sampling.

4.4.2 Facility/Operational Monitoring

4.4.2.1 Wastewater Containment Structure Monitoring

During the operation of the impoundments, the operator shall properly maintain and inspect all wastewater containment structures according to Section 4.3.4 Surface Impoundments and Equipment Maintenance and Section 13.2, Table 13.2-1, Surface Impoundment and BADCT Performance Standard Inspection & Alert Monitoring. A log of these inspections shall be kept at the facility for 10 years from the date of each inspection, available for review by ADEQ personnel.

4.4.2.2 Leakage Collection and Removal System Monitoring

The permittee shall monitor the LCRS for the presence of fluids on a daily basis in accordance with Table 13.2-2, Evaporation Ponds and Water Storage Reservoirs Flow Rate and LCRS Fluid Level Monitoring Points.

If fluids are collected in the LCRS during use or operation of the impoundment, the permittee shall remove accumulated fluids from the collection sump(s) at a rate necessary to prevent fluids from backing up into the drainage layer. Leakage flow rates shall be calculated based on the amount of liquid removed in GPD for comparison with liner leakage ALs specified in Section 13.2, Table 13.2-3, WSR and Evaporation Pond LCRS Monitoring Alert Levels. If fluid detected exceeds the ALs specified in Section 13.2, Table 13.2-3, then the permittee shall initiate the necessary contingency plan described in Section 4.5.1.2, Exceeding of Alert Levels for Leak Collection and Recovery System Monitoring/ Operation. A log of the monitoring activities and inspection results shall be kept at the facility for 10 years from the date of inspection and available for review by ADEQ personnel as necessary. Results of the LCRS monitoring shall be recorded and reported to ADEQ according to Section 10.0, Reporting and Recordkeeping Requirements.

4.4.2.3 Flow and Operational Performance Monitoring

The permittee shall collect flow measurements monthly as specified in Table 13.2-2 Evaporation Ponds and Water Storage Reservoirs Flow Rate and LCRS Fluid Level Monitoring Points. These measurements will be reported as average annual flow. The permittee shall inspect the impoundment for the Performance Standards in Section 13.2, Table 13.2-1 Surface Impoundment and BADCT Performance Standard Inspection & Alert Monitoring and Section 4.5 Evaporation Pond Contingency Plan Requirements. Contingency Plan Requirements for exceeding freeboard, overtopping, or ALs for liner leakage rates shall be followed by the permittee for the applicable conditions.

4.5 Evaporation Pond Contingency Plan Requirements [A.R.S. § 49-243(K)(3), (K)(7) and A.A.C. R18-9-A204 and R18-9-A205]

At least one copy of the approved contingency and emergency response plan(s) submitted in Attachment 15 to the APP application dated July 1, 2009 shall be maintained at the location where day-to-day decisions regarding the operation of the facility are made. The permittee shall be aware of and follow the contingency and emergency plans.

Some contingency actions involve verification sampling. Verification sampling shall consist of the first follow-up sample collected from a location that previously indicated a violation or the exceedance of an AL. Collection and analysis of the verification sample shall use the same protocols and test methods to analyze for the pollutant or pollutants that exceeded an AL or violated an AQL. The permittee is subject to enforcement action for the failure to comply with any contingency actions in this permit. Where verification sampling is specified in this permit, it is the option of the permittee to perform such sampling. If verification sampling is not conducted within the timeframe allotted, ADEQ and the permittee shall presume the initial sampling result to be confirmed as if verification sampling has been conducted. The permittee is responsible for compliance with contingency plans relating to the exceedance of an AL or violation of a DL, AQL or any other permit condition.

4.5.1 Exceeding of Alert Levels

Evaporation Pond 1 consists of three individual cells Evaporation Pond 1A, 1B and 1C. Evaporation Pond 2 consists of three individual cells Evaporation Pond 2A, 2B and 2C. Evaporation Pond 3 consists of two individual cells Evaporation Pond 3A and 3B. The cells shall be installed and maintained to function independently of each other. Contingency requirements in this section are applicable to each cell. Required actions only apply to the cell that is in alert status.

4.5.1.1 Exceeding of Alert Level - Freeboard

In the event that freeboard becomes less than a required minimum specified in Section 13.2 Table 13.2-1, Surface Impoundment and BADCT Performance Standard Inspection & Alert Monitoring, the permittee shall:

1. Immediately cease discharging to the impoundment to prevent overtopping. Remove, circulate in the system or properly dispose of the excess wastewater in the impoundment until the fluid level is restored at or below the impoundment specific freeboard limit. Record in the facility log/recordkeeping file, the amount of fluid removed, a description of the removal method and the disposal arrangements. The facility log/recordkeeping file shall be maintained according to Section 10.2, Operational Inspection / Log Book Recordkeeping.
2. Within 5 business days of discovery of freeboard exceedance, notify ADEQ Groundwater Section of the AL exceedance as specified in Section 10.3, Permit Violation and Alert Level Status Reporting.
3. Within 5 business days of discovery, evaluate the cause of the incident and adjust operational conditions as necessary to avoid future occurrences. Records documenting each freeboard incident and actions taken to correct the problem shall be included in the Annual Report as required in Section 10.4 (Operational, Other or Miscellaneous Reporting) of this permit.
4. Complete all tasks necessary to return the facility to its pre-alert operating condition. The facility is no longer on alert status once the operational indicator no longer indicates that a Performance AL is being exceeded.
5. Report according to Section 10.3 Permit Violation and Alert Status Reporting if required by Table 13.2-1 Surface Impoundment and BADCT Performance Standard Inspection & Alert Monitoring.

4.5.1.2 Exceeding of Alert Levels for Leak Collection and Recovery System Monitoring/Operation

4.5.1.2.1 Exceeding of AL1 for Normal Liner Leakage

If an AL1 as specified in Section 13.2, Table 13.2-3, WSR and Evaporation Pond LCRS Monitoring Alert Levels, has been exceeded, the permittee shall:

1. Within 5 business days of discovery, determine if the fluid in the collection sump is operational/process water from the impoundment by measuring the pH and conductivity of fluids in the impoundment and in the sump to allow direct comparison in water quality.
2. Within 5 business days, notify ADEQ Groundwater Section, in accordance with Section 10.3 Permit Violation and Alert Level Status Reporting, and include in the notification an assessment of the type of water in the sump based on the measurements taken according to Item (1) listed above.
3. Within 30 business days of discovery, assess the condition of the liner system using visual methods, electrical leak detection, or other methods as applicable.
4. Monitor fluid removal from the LCRS on a daily basis until the daily volume of fluid quantified either remains below AL1 for 30 calendar days, or ADEQ completes a review of a Liner Leakage Assessment Report (Item 6 below) and determines that the permittee must perform repairs, whichever comes first.
5. Within 45 calendar days of discovery of exceeding AL1, the permittee shall submit an initial report to ADEQ Groundwater Section, to address problems identified from the initial assessment of the liner system, the source of the fluid, and any remedial actions taken to minimize future occurrences which may include elevation control for leakage rates that remain below AL2. The report shall include the results of the initial liner evaluation, methods used to locate the leak(s) if applicable, any repair procedures implemented to restore the liner to optimal operational status if required, and other information necessary to minimize the risk of reoccurrence. If it is necessary to drain the WSR to assess the liner and identify the source of the fluid, this report will also include a schedule for WSR drainage and liner repair.

6. For leakage rates that continue to exceed AL1 and are below AL2, a Liner Leakage Assessment Report shall be included in the next annual report described in Section 10.4.1 Annual Reporting Requirements. The permittee may also submit the Liner Leakage Assessment Report to ADEQ prior to the annual report due date. This Liner Leakage Assessment Report shall be submitted to the ADEQ Groundwater Section.

ADEQ will review the Liner Leakage Assessment Report and may require that the permittee take additional action to address the problems identified from the assessment of the liner and perform other applicable repair procedures as directed by ADEQ, including repair of the liner or addressing and controlling infiltration of non-operational water detected in the LCRS.

4.5.1.2.2 Exceeding of AL2 for Excessive Liner Leakage

If an AL 2 specified in Section 13.2, Table 13.2-3, WSR and Evaporation Pond LCRS Monitoring Alert Levels has been exceeded, the permittee shall:

1. Immediately cease all discharge to the impoundment or redirect the discharge to another impoundment, which does not have an AL2 violation. Within 24 hours, determine if water in the collection sump is water from the impoundment by measuring the pH and conductivity of fluids contained in the impoundment and in the sump to allow direct comparison in water quality.
2. Within 5 business days of discovery, notify ADEQ Groundwater Section, in accordance with Section 10.3, Permit Violation and Alert Level Status Reporting and include an assessment regarding the type of fluid in the sump based upon the measurements taken according to Item (1) listed above.
3. Within 5 business days of discovery, collect samples from the liquid contained in the collection sump and analyze the samples in accordance with Section 13.3, Table 13.3-5, Evaporation Ponds Contingency Wastewater and LCRS Fluid Sampling. Within 30 calendar days of discovering an AL2 exceedance, submit the analytical data to ADEQ Groundwater Section.
4. Within 5 business days of discovery, initiate removing or transferring fluid from the impoundment to an alternate impoundment or offsite disposal location as needed to control elevation and isolate the suspected location of the leak, and within 30 business days of discovery, identify the location of the leak(s) using visual methods, electrical leak detection, or other methods as applicable. If unable to locate the leak within this time-frame, notify ADEQ and continue to take actions to identify the leak and reduce inventory in the impoundment until leak is located.
5. Within 45 calendar days of discovering an AL2 exceedance, submit a report to ADEQ as specified in Section 10.3, Permit Violation and Alert Level Status Reporting. Upon review of the report, ADEQ may request additional monitoring or remedial actions.
6. Within 60 calendar days of discovering an AL2 exceedance, submit for approval to ADEQ, a corrective action plan to address all problems identified from the assessment of the liner system. If unable to locate the leak within this time-frame, include in the corrective action plan, notify ADEQ and provide a schedule for identifying the leak and completing the report. At the direction of ADEQ, the permittee shall implement the approved plan.
7. Within 30 calendar days of being directed to implement the approved plan by ADEQ, repair any leaks identified in Item (4) above and perform all approved corrective actions. For any significant repairs identified by the permittee in the corrective action plan that may require more than 30 days to complete, the permittee may request and ADEQ may consider the request to extend the timeframe for completion of corrective actions and submit reports in accordance with Section 9.5, Corrective Actions.
8. Within 30 calendar days of completion of corrective actions, submit to ADEQ, a written report as specified in Section 9.5, Corrective Actions.

4.5.1.3 Exceeding Operational Performance Alert Levels

If any performance standard set in Section 13.2, Table 13.2-1, Surface Impoundment and BADCT Performance Standard Inspection & Alert Monitoring, has been exceeded, the permittee shall within 5 business days of discovery implement a corrective action plan, which includes the following:

1. Reduce or cease discharge to the impoundment, as necessary to perform repairs.
2. Implement necessary repair or maintenance works on structures or equipment to restore it to proper operational or working condition.
3. Remove from banks and berms any excessive vegetative growth, which may cause cracks or damage to the impoundment and liner system.
4. Maintain a log of all repairs on site for inspection by ADEQ in accordance with Section 10.2 Operation Inspection/Log Book Recordkeeping. Records documenting each incident and actions taken to correct the problem shall be included in the Annual Report as required in Section 10.4 (Operational , Other or Miscellaneous Reporting) of this permit.
5. Complete all tasks necessary to return the facility to its pre-alert operating condition. The facility is no longer on alert status once the operational indicator no longer indicates that a Performance AL is being exceeded.

4.5.2 Discharge Limitations Violations

4.5.2.1 Liner Failure, Unexpected Loss of Fluid, or Containment Structure Failure

If there is unexpected loss of wastewater in the impoundment, or any failure of a wastewater containment structure, or leakage through the liner system of a surface impoundment, such that fluids are released to the vadose zone, the permittee shall take the following actions:

1. Immediately cease all discharges to the surface impoundment as necessary to prevent any further releases to the environment.
2. Within 5 business days of discovery of the condition, notify ADEQ Groundwater Section in writing according to Section 10.3, Permit Violation and Alert Level Status Reporting.
3. Within 5 business days of discovery of a failure that resulted in a release to the subsurface, collect representative samples of the wastewater remaining in the surface impoundment. Samples shall be analyzed for the parameters specified in Section 13.3, Table 13.3-5, Evaporation Ponds Contingency Wastewater and LCRS Fluid Sampling. Within 30 days of the discovery, submit a copy of the analytical results to the ADEQ Groundwater Section.
4. Within 5 business days of discovery, initiate an evaluation to determine the cause of the incident. Identify the circumstances that resulted in the failure and assess the condition of the impoundment and liner. Implement any corrective actions necessary to resolve the problems identified in the evaluation. The permittee shall not resume discharging to the affected surface impoundment until repairs of any failed liner or structure are performed. Repair procedures, methods, and materials used to restore the system(s) to proper operating condition shall be described in the Facility Logbook/recordkeeping file and available to ADEQ for review.
5. Within 30 days of discovery, initiate removal and disposal of any fluid remaining in the impoundment as necessary to prevent further releases to the subsurface and/or as necessary to perform repairs. Record in the facility log/recordkeeping file the amount of fluid removed, a description of the removal method, and other disposal arrangements. The facility log shall be maintained according to Section 10.2 Operation Inspection/Log Book Recordkeeping.
6. If the permittee finds that leakage from the impoundment can be stopped by fluid elevation control, the permittee shall establish and maintain the required freeboard elevation below the identified leakage area within 30 calendar days of identifying the elevation of the leak. The permittee shall not discharge above the newly required freeboard elevation of the affected impoundment until repairs of any failed liner or structure are performed. Within 60 calendar days of identifying the leak location, the permittee shall initiate repairs to the impoundment or liner as necessary to restore proper

functioning of the impoundment and return the facility to compliance with this permit, or remove the impoundment from service as specified in Section 11.1 Temporary Cessation, and Section 11.2 Closure, and submit an application to amend this permit to reflect the change in status. Repair procedures, methods, and materials used to restore the impoundment to proper operating condition shall be described in the facility log/recordkeeping file and available to ADEQ for review.

7. If the permittee finds that the affected impoundment must be emptied completely to perform repairs after the cessation of discharge (in Item 1 above), initial required evaluation (in Item 4 above) and liquid depth reduction (in Items 5 and 6 above), the permittee shall remove all excess wastewater within 30 calendar days of identifying the leak. The permittee shall not resume discharging to the impoundment until repairs of any failed liner or structure are performed. Within 60 calendar days of removing excess fluid, the permittee shall initiate repairs or remove the impoundment from service as specified in Section 11.1 Temporary Cessation, and Section 11.2 Closure, and submit an application to amend this permit to reflect the change in status. Repair procedures, methods, and materials used to restore the impoundment to proper operating condition shall be described in the facility log/recordkeeping file and available to ADEQ for review.
8. Within 45 calendar days of discovery of the incident, submit a written report to ADEQ as specified in Section 10.3, Permit Violation and Alert Level Status Reporting. Include a description of the actions performed in Items (1) through (7) listed above and a copy of the analytical results, or if the investigation is incomplete, a plan of action to return the facility to compliance. Upon review of the report, ADEQ may request additional monitoring or remedial action. For a condition lasting more than 90 calendar days, routine status reports shall be provided to ADEQ as required in Section 10.3, Permit Violation and Alert Level Status Reporting.
9. Within 60 calendar days of discovery, initiate an assessment of the impacts to the subsoil and/or groundwater resulting from the incident. Any assessment of potential groundwater contamination shall include an updated well inventory, groundwater contour maps and direction of and velocity of groundwater flow, connection between the shallow and regional groundwater and the potential impacts to the regional aquifer. If soil or groundwater is impacted, submit a corrective action plan to ADEQ within 90 calendar days of discovery, to address problems identified in the assessment, including identification of releases to the environment, remedial actions and/or monitoring, and a schedule for completion of activities. At direction of ADEQ, the permittee shall implement the approved plan.
10. Within 30 calendar days of completion of corrective actions, submit to ADEQ, a written report as specified in Section 9.5, Corrective Actions. Upon review of the submitted report, ADEQ may require additional monitoring, increased frequency of monitoring, amendments to permit conditions or other actions, including installation of additional wells at the POC.

4.5.2.2 Overtopping of the Surface Impoundment

If overtopping of fluid from the impoundment berms occurs, the permittee shall:

1. Immediately cease all discharges directly to the impoundment to prevent any further releases to the environment.
2. Within 5 business days of discovery, notify ADEQ Groundwater Section of the overtopping event in writing in accordance with Section 10.3, Permit Violation and Alert Level Status Reporting).
3. Within 5 business days of discovery, collect representative samples of the discharged fluid and the wastewater contained in the overtopped impoundment for use in assessing potential subsurface impact. Discharged fluid samples shall be collected from the locations specified in Section 13.3, Table 13.3-2 Plant Upset Releases – Contingency Characterization, Unlined Ditches & Sedimentation Basins 1 and 2 Sample Collection Locations that are impacted by the spill, and analyzed for the parameters specified in Section 13.3, Table 13.3-3 Contingency Plant Upset and Overtopping Releases to Unlined Facilities Sampling.

4. Within 5 business days of discovery, initiate the removal, re-circulation, transference to another cell, or proper disposal of excess fluid in the impoundment until the fluid level is restored at or below the required freeboard. Record in the facility log, the amount of wastewater removed, a description of the removal method and the disposal arrangements. The facility log shall be maintained according to Section 10.2, Operation Inspection / Log Book Recordkeeping.
5. Within 30 calendar days of discovery, evaluate the cause of the overtopping and identify the circumstances that resulted in the incident. Implement corrective actions and adjust operational conditions as necessary to resolve the problems identified in the evaluation. Repair any systems as necessary to prevent future occurrences of overtopping.
6. Within 45 calendar days of discovery of overtopping, submit a report to ADEQ Groundwater Sections as specified in Section 10.3, Permit Violation and Alert Level Status Reporting including the analytical results of wastewater sample(s) collected in the impoundment. Include a description of the actions performed in Items (1) through (5) listed above. Upon review of the report, ADEQ may request additional monitoring or remedial actions.
7. Within 60 calendar days of discovery, conduct an assessment of the impacts to the subsoil and/or groundwater resulting from the incident. If soil or groundwater is impacted, submit to ADEQ, for approval, a corrective action plan to address problems identified in the assessment, including identification of releases to the environment, remedial actions and/or monitoring, and a schedule for completion of activities. At direction of ADEQ, the permittee shall implement the approved plan. Any assessment of potential groundwater contamination shall include an updated well inventory, groundwater contour maps and direction of and velocity of groundwater flow, connection between the shallow and regional groundwater and the potential impacts to the regional aquifer.
8. Within 30 calendar days of completion of all required corrective actions, submit to ADEQ, a written report as specified in Section 9.5, Corrective Actions. Upon review of the submitted report, the Department may require additional monitoring, increased frequency of monitoring, amendments to permit conditions or other actions.

4.5.2.3 Discharge of Unauthorized Materials to the Impoundment

Authorized discharges are specified in Section 4.3, Evaporation Pond Discharge Limitations. If any unauthorized materials are discharged to the impoundment, the permittee shall:

1. Immediately cease all unauthorized discharges to the impoundment.
2. Within 5 business days of discovery, notify ADEQ Groundwater Section in writing in accordance with Section 10.3, Permit Violation and Alert Level Status Reporting.
3. Within 5 business days of discovery, identify the source of the material and determine the cause for the discharge. Evaluate the discharge to determine if it is compatible with the impoundment liner. Based on the evaluation of the incident, repair any systems or equipment and/or adjust operations, as necessary to prevent future occurrences of unauthorized discharges.
4. Within 45 calendar days of a discharge of unauthorized materials to the impoundment, submit a report to ADEQ as specified in Section 10.3, Permit Violation and Alert Level Status Reporting. Include a description of the actions performed in Items (1) through (3) listed above. Upon review of the report, ADEQ may request additional monitoring or remedial actions.
5. Within 60 calendar days of discovery, if soil or groundwater is impacted, submit a corrective action plan to ADEQ, to address problems identified in the assessment, including identification of releases to the environment, remedial actions and/or monitoring, and a schedule for completion of activities. At the direction of ADEQ, the permittee shall implement the approved plan.
6. Within 30 calendar days of completion of corrective actions, submit to ADEQ, a written report as specified in Section 9.5, Corrective Actions. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, or other actions.

4.6 Evaporation Pond Closure Plan [A.R.S. §§ 49-243(K)(6), 49-252 and A.A.C. R18-9-A209(B)]

Within 90 calendar days following notification of closure, the permittee shall submit for approval to the Groundwater Section, a detailed Closure Plan which meets the requirements of A.R.S. § 49-252 and A.A.C. R18-9-A209(B)(3). Furthermore, at a minimum, the plan shall include the following specific activities and data documenting that the activities have been completed:

1. Removal of remaining water from the evaporation ponds through evaporation.
2. Characterization and removal of any sludge or sediments from the evaporation ponds.
3. Removal of the composite liner system and LCRS components, and disposal of the materials in an approved landfill. The liners and the depositional material shall be disposed of in accordance with state and federal requirements.
4. Removal of inflow piping and associated structures and disposal of the materials in an approved landfill in accordance with state and federal requirements.
5. Demolition of the concrete structures associated with the evaporation ponds to a level approximately 3 feet below grade and backfill with soil materials.
6. Sampling and testing the soils beneath the composite liner system in the evaporation pond as needed to demonstrate compliance with established Soil Remediation Levels (SRLs) and as required to demonstrate that there are no concentrations of contaminants remaining in the vadose zone that may cause or contribute to a violation of an AWQS at the applicable POC after closure. Remove and appropriately dispose of soils with concentrations above the applicable SRLs as needed to attain clean closure.
7. Deconstruction of the pond embankments and use soil to backfill. Import additional materials if necessary to return the pond to pre-pond elevations.
8. Regrading and revegetation.

If the closure plan achieves clean closure immediately, ADEQ shall issue a letter of approval to the permittee. If the closure plan contains a schedule for bringing the facility to a clean closure configuration at a future date, ADEQ may incorporate any part of the schedule as an amendment to this permit.

5.0 SEDIMENTATION BASINS

Sedimentation Basins 1 and 2 are unlined surface impoundments constructed and maintained to collect stormwater, stormwater in combination with discharges from specific sources (A.R.S. § 49-250(B)(23)), and NRC-allowable non-stormwater discharges from the facility, which meet the criteria for exemption from APP-regulation pursuant to A.R.S. § 49-250(B)(23). Sedimentation Basin 1 is a non-engineered three sided earthen containment pond that collects drainage from the western portion of the facility and is approximately 15 acres in area and approximately 1,000 feet long. Sedimentation Basin 2 is a non-engineered three sided earthen containment pond that collects drainage from the eastern portion of the Facility is approximately 60 acres in area and approximately 3,000 feet long. These basins are normally dry except during and after storm events.

During plant upset conditions, these basins have periodically received discharges that are not listed under the exemption for stormwater surface impoundments, A.R.S. § 49-250(B)(23) and had not been closed for these past discharges. Discharges received have included: second stage clarifier; demineralizer water from Units 1 and 2; cooling water from Unit 2; cooling tower overflow from Units 1, 2, and 3; spray pond water from Unit 1, 2 and 3; oily/water separator discharge; pipeline water; cooling tower over spray from Units 1 and 2; heating, air conditioning, and ventilation (HVAC) cooling water; chlorinated secondary treated effluent; and reverse osmosis (RO) pump seal water from the WRF (Blackson, 2003).

Under an ADEQ approved work plan, PVNGS conducted a field investigation and soil sampling activities in Sedimentation Basins 1 and 2 in March 2016. PVNGS collected soil and sediment samples from 24 locations in Sedimentation Basin 1 and related ditches. PVNGS collected soil and sediment samples from 34 locations in Sedimentation Basin 2 and related ditches. At each location, PVNGS typically took samples from three depths, one foot, three feet and five feet. PVNGS also collected background soil samples from eight (8) locations at one depth, one foot. The sediment and soil were analyzed for the following constituents:

- Metals – Antimony, Arsenic, Barium, Beryllium, Boron (metalloid), Cadmium, Chromium, Lead, Mercury, Nickel, Selenium and Thallium
- Anions – Fluoride and Nitrate/Nitrite
- Radionuclides – Tritium, Cesium-134, Cesium-137 and Cobalt-60
- Volatile Organic Compounds (VOCs) – Arizona List (at select locations and if observable staining)

- Polynuclear Aromatic Hydrocarbons (PAHs) – Only analyzed if observable staining.

Analytical results for Sedimentation Basins 1 and 2 and associated ditches did not detect exceedances for respective minimum Groundwater Protection Levels (GPLs) for any of the analytes. Because no staining was observed, PAHs were not analyzed from any of the samples collected.

Two POC wells, APP-18 and PV-195A, are associated with Sedimentation Basins 1 and 2. Groundwater results did not indicate any violations of the Aquifer Quality Limits (AQLs) in each POC well. Clean closure has been obtained and Sedimentary Basins 1 and 2 and their associated ditches have been removed as discharging facilities from within this permit. Groundwater monitoring at the two associated POC wells is no longer required.

6.0 SLUDGE LANDFILL

PVNGS operates and maintains a surface drying Sludge Disposal Landfill that is approximately 213 acres in size. The Sludge Landfill is located on the east and south side of the WRF. The Sludge Landfill is an active, unlined solid waste disposal facility used for surface drying and land-filling of sludge from the WRF and the cooling towers. Sludge is deposited by the area-fill method and covered with 1 foot of soil with each application

STP sludge is not deposited in the Sludge Disposal Landfill. The STP sludge is cycled back to the tricking filters of the WRF.

6.1 Sludge Landfill BADCT [A.R.S. § 49-243(B) and A.A.C. R18-9-A202(A)(5)]

The permittee shall operate and maintain a surface drying Sludge Disposal Landfill that is approximately 213 acres in size to receive cooling tower sludge and sludge from water treatment processes. The Sludge Landfill is located in a flat desert area and shall be filled to the prescribed elevation and capped with a layer of liner dirt. Alternately, the sludge may be disposed at an offsite permitted solid waste facility subject to applicable Federal and State Solid Waste Regulations. The Sludge Landfill is operated as a private solid waste landfill in accordance with Arizona Radiation Regulatory Authority (ARRA) Special Approval License No.7-368 and amendments and in accordance with A.R.S. § 49-762.07 (E) and (F). Sludge disposed in this landfill shall be characterized in accordance with requirements below and Section 13.2, Table 13.2-4, WRF and Cooling Tower Sludge Disposal Landfill Sludge Sampling Parameters. Operations shall include routine characterization in accordance with this permit.

6.2 Sludge Landfill Operational Requirements and Methods

Sludge shall be deposited by the area-fill method and covered with 1 foot of soil after placement. The landfill shall be maintained according to the requirements in Table 13.2-1 Surface Impoundment and BADCT Performance Standard Inspections and Alert Monitoring.

6.3 Sludge Landfill Discharge Limitations [A.R.S. §§ 49-201(14), 49-243 and A.A.C. R18-9-A205(B)]

The Sludge Disposal Landfill shall be operated, maintained, designated and authorized to receive the following materials only:

1. Sludge produced by the two-stage lime treatment process from the WRF. The sludge shall be dewatered before it is placed in the landfill.
2. Sodium carbonate and sodium sulfate from the following sources:
 - (a) Spills at the unloading and silo stations;
 - (b) Spills and leaks from the chemical feed and transport lines; and
 - (c) Neutralization materials and products from the neutralization of small sulfuric acid spills.
3. Lime grits from slaker stations and lime waste from the following sources:
 - i. Spills at the unloading and silo transfer stations;
 - ii. Spills and leaks from the lime feed and transport lines;
 - iii. Neutralization materials and products from the neutralization of small sulfuric acid spills; and
 - iv. Clean out from the recalcination furnace
4. Groundwater or WSR water sprayed in limited quantities to remove residual sludge from the bed of the trucks.
5. Cooling tower sludge, which meets the following requirements:
 - (a) Concentrations of each isotope in the cooling tower sludge shall not exceed the limits imposed by ARRA Special Approval License No. 7-368, and amendments/revisions made to that license issued by ARRA;

- (b) The sludge shall not meet the definition of hazardous waste as defined in 40 CFR Part 261; and
- (c) The sludge shall not contain free liquids.

Failure to comply with these DLs shall be reported in accordance with Section 10.3, Permit Violation and Alert Level Status Reporting and appropriate corrective actions taken in accordance with Section 9.4, Emergency Response and Contingency Requirements for Unauthorized Discharges and Section 9.5 Corrective Actions.

6.4 Sludge Landfill Sampling and Monitoring Requirements [A.R.S. § 49-243(K)(1), A.A.C. R18-9-A206(A)]

6.4.1 Cooling Tower Sludge

The permittee shall sample cooling tower sludge prior to disposal in the Sludge Disposal Landfill on a per disposal event basis. The samples shall be collected and evaluated according to Section 13.2, Table 13.2-4, WRF and Cooling Tower Sludge Disposal Landfill Sludge Sampling Parameters and conformance with ARRA Special Approval License 7-368 requirements and restrictions.

1. Samples shall be a composite representing the horizontal and vertical distribution of the sludge from each accumulation area.
2. Samples for radiological analysis shall be collected and evaluated in accordance with ARRA Special Approval License No. 7-368, and subsequent amendments to the ARRA license for this Facility.
3. The samples for radiological analysis shall be analyzed by equipment capable of detecting the presence of principal gamma-ray emitting isotopes.
4. The Radiological Environmental Monitoring Program Report shall be included in the Annual Monitoring and Compliance Report, submitted in accordance Section 10.4.1, Annual Reporting Requirements.
5. Exceeded ALs in Section 13.2 Table 13.2-4, WRF and Cooling Tower Sludge Disposal Landfill Sludge Sampling Parameters, shall be reported in accordance with Section 10.3, Permit Violation and Alert Level Status Reporting.
6. In accordance with Section 10.4.1, Annual Reporting Requirements, the Annual Monitoring and Compliance Report shall contain summary table(s) of all analytical results for sludge testing performed for disposal of cooling tower sludge and WRF sludge in the Sludge Disposal Landfill during the calendar year. The report shall also contain a description of the estimated volumes disposed during the previous year. Certified analytical laboratory reports (CARs) shall be maintained at the Facility APP files and presented to an ADEQ inspector or representative within 30 calendar days of request.

6.4.2 WRF Sludge Sampling

The permittee shall sample the WRF sludge deposited in the Sludge Disposal Landfill in accordance with Section 13.2, Table 13.2-4, WRF and Cooling Tower Sludge Disposal Landfill Sludge Sampling Parameters. The disposal of sludge materials shall be in accordance with Section 6 of this permit and shall be limited to those materials listed as authorized for disposal in Discharge Limitations, Section 6.3, Sludge Landfill Discharge Limitations.

6.4.3 Methane Gas Monitoring

1. A semiannual monitoring program shall be implemented for a 3-year period to ensure that methane gas concentrations remain below five (5) percent (%) by volume. If methane is not detected during the 3-year period, monitoring may be discontinued with ADEQ approval. In order to assess the effectiveness of the methane monitoring, the results of each monitoring event shall be submitted to ADEQ within 60 days after each event.
2. The permittee shall operate and maintain methane gas monitoring equipment to ensure that the standards of 40 CFR § 257.3-8 are met. Such routine methane monitoring shall include monitoring the gas probes installed around the landfill footprint as shown on Figure 1 Methane Monitoring Locations of the *Methane Monitoring Plan* dated March 31, 2017.
3. The permittee must ensure, in accordance with 40 CFR § 257.3-8, that the concentration of methane gas does not exceed:

- a. Twenty-five percent (25%) of the lower explosive limit for the gases in facility structures (excluding gas control or recovery system components), and
 - b. The lower explosive limit for the gases at the property boundary.
4. If a methane gas exceedance occurs at facility structures or at the facility property boundaries, as described above, the permittee shall immediately report the exceedance to ADEQ Solid Waste Unit as specified in Sections 10.3.1 and 10.5.
5. The permittee shall initiate an investigation followed by corrective actions to resolve any problems identified by the investigation that may have led to an LEL exceedance. To implement any corrective action the permittee shall obtain prior approval from ADEQ.

6.5 Sludge Landfill Contingency Plan Requirements

If a sludge AL set in Section 13.2, Table 13.2-4, WRF and Cooling Tower Sludge Disposal Landfill Sludge Sampling Parameters has been exceeded, the permittee shall take the following actions:

1. Conduct verification sampling using Toxicity Characteristic Leaching Procedure (TCLP) extraction procedures and analytical methods within 5 business days of becoming aware of an AL being exceeded. Submit analytical results of verification sampling to ADEQ within 30 calendar days of the sampling date.
2. Within 5 business days of discovery, notify the ADEQ Groundwater Section in writing and in accordance with Section 10.3, Permit Violation and Alert Level Status Reporting to determine the appropriate action(s).
3. If sludge monitoring and disposal results require ARRA notification per the ARRA Special Approval License No. 7-368, and amendments due to specified limits being exceeded, the permittee shall notify the ADEQ Groundwater Section in writing within 5 business days of becoming aware of the condition or ARRA license exceedance.
4. A scope of work that addresses corrective actions shall be submitted to the Department for review and comment within 60 calendar days of becoming aware of the exceeded level.
5. A corrective action plan for response to future exceedances and meeting ADEQ standards must be submitted to the Department for review within 180 calendar days after the limit(s) have been exceeded. Upon approval, ADEQ may amend the permit to include the corrective action plan.

6.6 Sludge Landfill Closure Plan [A.R.S. §§ 49-243(K)(6), 49-252 and A.A.C. R18-9-A209(B)]

Within 90 calendar days following notification of closure, the permittee shall submit for approval to the Groundwater Section, a detailed Closure Plan which meets the requirements of A.R.S. § 49-252 and A.A.C. R18-9-A209(B)(3)(a). At the conclusion of site operations the permittee shall cap the Sludge Disposal Landfill and leave all materials in place. The Sludge Disposal Landfill shall be capped with 3 feet of low permeability soils, compacted and capped to facilitate drainage and prevent standing water from accumulating above the cap. The closure plan shall include Hydrologic Evaluation of Landfill Performance (HELP) or subsequent modeling to demonstrate that no fluids will infiltrate and reach the shallow aquifer after closure and clean closure has been achieved. The landfill shall be closed in a manner that demonstrates that the landfill shall not cause or contribute to post-closure violation of AWQS at the applicable POC. Closure reports shall include grading and draining plans sealed by an Arizona-registered Professional Engineer and cross-sections and as-builts of the landfill cap.

Closure activities shall include construction of stormwater run-on diversion structures as necessary to ensure that the landfill cap is protected from erosion and standing water does not infiltrate the land-filled materials.

If the closure plan achieves clean closure immediately, ADEQ shall issue a letter of approval to the permittee. If the closure plan contains a schedule for bringing the facility to a clean closure configuration at a future date, ADEQ may incorporate any part of the schedule as an amendment to this permit.

7.0 RUBBISH LANDFILL

The facility is an active, unlined solid waste disposal facility that receives PVNGS solid waste. Waste is deposited into trenches and covered with soil. The landfill is located on the east-central portion of the PVNGS site, east of the switchyard and south of the WSR, and is approximately 100 acres in size.

7.1 Rubbish Landfill BADCT [A.R.S. § 49-243(B) and A.A.C. R18-9-A202(A)(5)]

The permittee shall operate and maintain the Rubbish Landfill as an unlined trench-type solid waste disposal facility located within the secure confines of the 4,280 acre PVNGS site. The Rubbish Landfill is located in a flat desert area and waste shall either be placed in trenches and covered with a layer of dirt after placement, or disposed at an offsite permitted solid waste facility subject to applicable Federal and State Solid Waste Regulations. The Rubbish Landfill shall be operated as a private landfill in accordance with A.R.S. § 49-762.07(E) and (F).

7.2 Rubbish Landfill Operational Requirements and Method

The Rubbish Landfill is a solid waste landfill used privately by the permittee. It shall be operated in accordance with Federal and State statutes and regulations, which govern the operation and types of wastes disposed. Wastes shall be disposed in trenches and covered with soil after placement.

7.3 Rubbish Landfill Discharge Limitations [A.R.S. §§ 49-201(14), 49-243 and A.A.C. R18-9-A205(B)]

The Rubbish Landfill shall be designated and authorized to receive only noncombustible, non-hazardous, non-radioactive and non-putrescible solid waste materials resulting from the construction, operation and maintenance activities of the PVNGS Facility. The Rubbish Landfill is authorized to receive landscape-trimming material.

The landfill shall not receive the following wastes:

1. Petroleum-contaminated soils (PCS) exceeding non-residential SRLs for polyaromatic hydrocarbons (PAHs), benzene, toluene, ethylbenzene, xylene (BTEX) and total petroleum hydrocarbons (TPH). PCS is a special waste regulated by A.R.S. § 49-856.B.3, A.R.S. § 49-857, and A.R.S. § 49-858. These regulations prohibit PCS from being disposed in the Rubbish Landfill;
2. Municipal solid wastes are prohibited from disposal in this landfill in accordance with 40 CFR 257.1(a) and 257.1(c)(10);
3. Household waste as defined in A.R.S. § 49-701(14);
4. Special waste regulated under A.R.S. § 49-856.B.3, A.R.S. § 49-857, and A.R.S. § 49-858 is prohibited from being disposed in the Rubbish Landfill;
5. Bulk liquids and liquid waste as defined in 40 CFR 258.28;
6. Hazardous wastes including soils that exceed residential SRLs for contaminants that are considered hazardous or can leach hazardous contaminants as defined in 40CFR Part 261 and A.R.S. § 49-921(5);
7. Radioactive materials as defined in A.R.S. § 30-651.14;
8. Regulated friable asbestos-containing material regulated by A.R.S. § 49-856.B.3, A.R.S. § 49-857 and A.R.S. § 49-858 is prohibited from disposal in the Rubbish Landfill;
9. Polychlorinated biphenyl (PCB) material regulated by A.R.S. § 49-856.B.3, A.R.S. § 49-857 and A.R.S. § 49-858 is prohibited from disposal in the Rubbish Landfill; and,
10. Other wastes which are prohibited by Federal, State or local rules and regulations from disposal at non-municipal, private solid waste landfills.

Failure to comply with these DLs shall be reported in accordance with Section 10.3, Permit Violation and Alert Level Status Reporting, and appropriate corrective actions taken in accordance with Section 9.4, Emergency Response and Contingency Requirements for Unauthorized Discharges, and Section 9.5, Corrective Actions.

7.4 Rubbish Landfill Monitoring Requirements [A.R.S. § 49-243(K)(1), A.A.C. R18-9-A206(A)]

All methane gas monitoring requirements of Section 6.4.3 are applicable.

7.5 Rubbish Landfill Contingency Plan Requirements

The permittee shall follow the contingency plan requirements in Section 9.1, General Contingency Plan Requirements and Section 9.4, Emergency Response and Contingency Requirements for Unauthorized Discharges.

7.6 Rubbish Landfill Closure Plan [A.R.S. §§ 49-243(K)(6), 49-252 and A.A.C. R18-9-A209(B)]

Within 90 calendar days following notification of closure, the permittee shall submit for approval to the Groundwater Section, a detailed Closure Plan which meets the requirements of A.R.S. § 49-252 and A.A.C. R18-9-A209(B)(3)(a). At the conclusion of site operations the permittee shall cap the Rubbish Landfill and leave all materials in place. The Rubbish Landfill shall be capped with 3 feet of low permeability soils,

compacted and capped to facilitate drainage and prevent standing water from accumulating above the cap. The closure plan shall include HELP or subsequent modeling to demonstrate that no fluids will infiltrate and reach the shallow aquifer after closure. The landfill shall be closed in a manner that demonstrates that the landfill shall not cause or contribute to post-closure violation of AWQS at the applicable POC. Closure reports shall include grading and drainage plans and cross-sections and as-builts of the landfill cap.

Closure activities shall include construction of stormwater run-on diversion structures as necessary to ensure that the landfill cap is protected from erosion and standing water does not infiltrate the landfilled materials.

If the closure plan achieves clean closure immediately, ADEQ shall issue a letter of approval to the permittee. If the closure plan contains a schedule for bringing the facility to a clean closure configuration at a future date, ADEQ may incorporate any part of the schedule as an amendment to this permit.

8.0 MONITORING REQUIREMENTS [A.R.S. § 49-243(B) and (K)(1)k, A.A.C. R18-9-A206(A)]

Unless otherwise specified in this permit, all monitoring required in this permit including this section shall continue for the duration of the permit, regardless of the status of the facility. Monitoring shall commence the first full monitoring period following permit issuance. All sampling, preservation and holding times shall be in accordance with currently accepted standards of professional practice. Trip blanks, equipment blanks and duplicate samples shall also be obtained, and Chain-of-Custody procedures shall be followed, in accordance with currently accepted standards of professional practice. Copies of laboratory analyses and Chain-of-Custody forms shall be maintained at the permitted facility. Upon request, these documents shall be made immediately available for review by ADEQ personnel.

Groundwater monitoring requirements are presented in Section 13.2, Table 13.2-5.

8.1 Point of Compliance (POC) Wells [A.R.S. § 49-244]

The POC wells are established by the following monitoring locations: POC Well Monitoring Locations (NAD27 Datum)			
Well Name	Latitude (N)	Longitude (W)	Location Description
Sludge Disposal and Rubbish Landfills			
PV-R2AR	33° 23' 18"	112° 50' 40"	Southeast of 85-Acre Water Storage Reservoir. Screened from 72-102 feet bgs.
Conceptual POC Locations			
Evaporation Ponds			
APP-15	33° 22' 13"	112° 50' 48"	East of Evaporation Pond 2. Screened from 45-90 feet bgs.
PV-14H	33° 21' 48"	112° 50' 60"	East Southeast of Evaporation Pond 2. Screened from 20-80 feet bgs.
APP-22	33 20' 59.78"	112 52' 06.11"	South of Evaporation Pond 3. Screened from 126-161 feet bgs.
APP-4R	33° 21' 30"	112° 52' 33"	Replacement for APP-4 (PV-Clay Well #1) - West of Evaporation Pond 3A. Screened from 150-180 feet bgs.
85-Acre Water Storage Reservoir			
PV-R2AR	33° 23' 18"	112° 50' 40"	Southeast of 85-Acre Water Storage Reservoir. Screened from 72-102 feet bgs.

bgs = below ground surface

Monitoring requirements for POC well PV-R2AR is listed in Table 13.2-5. Section 13.2 of this permit. The Director may amend this permit to designate additional points of compliance if information on groundwater gradients, groundwater quality or groundwater usage indicates the need. If so directed, the permittee shall install monitoring wells at additional monitoring locations or shall install deeper monitoring wells, if groundwater elevations drop below screened intervals of the monitoring wells identified in this permit.

8.2 Water Level Wells in the Shallow Aquifer

Depth to water shall be collected from the POC and conceptual POC wells along with additional wells to contour the upper most aquifer above the Palo Verde Clay. Depth to water shall be collected at the following wells and locations:

Water Level Monitoring Locations (NAD27 Datum)			
Well Name	Latitude (N)	Longitude (W)	Location Description
APP-10	33° 23' 17"	112 °51' 58"	West of Unit 2. Screened from 135-160 feet bgs.
APP-15	33° 22' 13"	112° 50' 48"	East of Evaporation Pond 2. Screened from 45-90 feet bgs.
APP-18	33° 22' 13"	112° 50' 48"	West of the former Sedimentation Basin 1. Screened from 95-145 feet bgs.
APP-19	33 22' 40.18"	112 50' 39.05"	East of the former Sedimentation Basin 2. Screened from 63-113 feet bgs.
APP-22	33 20' 59.78"	112 52' 06.11"	South of Evaporation Pond 3. Screened from 126-161 feet bgs.
PV-14H	33° 21' 48"	112° 50' 60"	East Southeast of Evaporation Pond 2. Screened from 20-80 feet bgs.
PV-173R	33 23' 46.52"	112 51' 53.87"	West of the 85-Acre Water Storage Reservoir. Screened from 50-100 feet bgs.
PV-207A	33 20' 59.78"	112 52' 06.11"	North of the 45-Acre Water Storage Reservoir. Screened from 49-99 feet bgs.
PV-28HB	33° 22' 40.01"	112° 51' 27.38"	North of Sedimentation Basin No. 2. Screened from 62-72 feet bgs.
PV-34H	33° 21' 44.18"	112° 51' 31.62"	South of Evaporation Basin No. 2B. Screened from 20-65 feet bgs.
PV-Q8	33° 21' 49"	112° 52' 29"	Southwest of Evaporation Pond 1. Screened from 50-90 feet bgs.
PV-R2AR	33° 23' 18"	112° 50' 40"	Southeast of 85-Acre Water Storage Reservoir. Screened from 72-102 feet bgs.

bgs = below ground surface

8.3 POC Well Replacement and New Monitor Wells

In the event that one or more of the designated POC wells in Section 8.1 should become unusable or inaccessible due to damage, insufficient water in the well for sampling for more than two sampling events, or any other cause, a replacement POC well shall be constructed and installed with the approval of ADEQ. If the replacement well is 50 feet or less from the original well, the ALs and/or AQLs calculated for the designated POC well may at the discretion of ADEQ apply to the replacement well. Otherwise, the ALs and/or AQLs shall be set following the provisions in Section 10.3.2, Ambient Groundwater Monitoring Reports, and subsection 10.3.2.2, Establishing ALs and AQLs.

The permittee shall submit plans for new well construction and design for ADEQ review prior to drilling any new wells required by this permit for APP monitoring. Telescoping casing design and pressure grouting techniques shall be used to seal the annular space for wells that penetrate the shallow aquifer and Middle Fine Grained Unit. Wells shall be designed with appropriate surface seals, annular seals to prevent cross contamination, plugs above the filter pack to prevent cement grout intrusion into the filter pack and screen, and filter pack and screen size selected for the lithology of the screened interval.

No more than 50 feet of screen shall be placed in any monitoring well. The wells shall be designed for the top of screen to coincide with the top of the aquifer and for no more than 10 feet of screen to be placed above the top of saturation.

The wells shall be developed after installation and allowed to recover at least one week prior to collection of the first groundwater sample. The first sample shall be collected within 90 calendar days of well installation.

8.3.1 Well Installation Reports

A well installation report shall be submitted to ADEQ within 90 calendar days of the completion of new well installations in accordance with Section 10.4.4, Well Installation and Well Abandonment Reports, of this permit.

8.3.2 Ambient Groundwater Monitoring Reports

In accordance with Section 10.4.2, Ambient Groundwater Monitoring Reports, an ambient groundwater monitoring report shall be submitted at the conclusion of the ambient groundwater monitoring period for any new well required by this permit.

8.4 Groundwater Monitoring and Sampling Protocols

Wells shall be sampled and water elevation data collected according to the plan for every sampling event. The permittee shall note in the logbook (Section 10.2, Operation Inspection/Log Book Recordkeeping), any deviations from the sampling protocol which results from field conditions such as flooding and shall include a description of the deviations in the annual report. Deviations from the sampling protocol do not require special reporting to ADEQ but shall be summarized in the Annual Report.

Static water levels shall be measured and recorded prior to each sampling event. Wells shall be purged of at least three borehole volumes (as calculated using the static water level) or until indicator parameters (pH, temperature and conductivity) are stable, whichever represents the greater volume. If evacuation results in the well going dry, the well shall be allowed to recover to 80 percent of the original borehole volume, or for 24 hours, prior to sampling. If after 24 hours there is not sufficient water for sampling, the well shall be recorded as "dry" for the monitoring event. An explanation for reduced pumping volumes, a record of the volume pumped, and modified sampling procedures shall be reported and submitted with the Self-Monitoring Report Form (SMRF).

The permittee may conduct the sampling using the low-flow purging method as described in the Arizona Water Resources Research Center, March 1995 *Field Manual for Water Quality Sampling*. Static water levels shall be measured and recorded prior to each sampling event. The well must be purged until indicator parameters stabilize. Indicator parameters shall include dissolved oxygen, turbidity, pH, temperature, and conductivity.

The permittee may use one or more no-purge sampling techniques with written approval from ADEQ.

8.4.1 Ambient Groundwater Monitoring

Ambient Groundwater Monitoring shall be conducted in any new groundwater monitoring wells required by this permit and installed in accordance with this permit whether as part of a specified compliance schedule item or as otherwise directed by ADEQ. Ambient groundwater monitoring shall be performed to establish background water quality in new wells. Quarterly ambient groundwater sampling shall be conducted and samples collected for 2 years (8 sampling rounds) and analyzed for the constituents in Table 13.2.5 in Section 13.2. At the conclusion of the ambient monitoring, an Ambient Groundwater Monitoring Report proposing ALs and for a POC well also AQLs shall be submitted to ADEQ in accordance with Section 10.4.2, Ambient Groundwater Monitoring Reports.

8.4.2 Compliance Groundwater Monitoring

After completion of the initial ambient groundwater monitoring requirements the permittee shall initiate compliance groundwater monitoring at the replacement POC Monitor Well within 6 months of collection of the last ambient sample. Based on the findings of the ambient groundwater monitoring program, the permittee may request that the permit be amended to reduce the groundwater monitoring frequency for the constituents listed, or a reduction in the list of parameters.

8.4.2.1 Semiannual Groundwater Monitoring

Monitoring shall be performed on a semiannual (once every 6 months) basis to determine if ALs or AQLs have been exceeded in the POC well and in accordance with Table 13.2-5 in Section 13.2, of this permit. Compliance monitoring shall continue for the life of the facility and closure and post closure periods.

8.4.2.2 Groundwater Elevation and Contouring

The permittee shall collect water elevation measurements in on-site wells listed in the table in Section 8.2, Water Level Monitoring Locations, and provide semiannual groundwater contour maps for the shallow aquifer using Surfer or an equivalent program and post processing or using hand contouring methods (and submitting calculation and computation pages for triple point solutions) if insufficient data. The contour maps and hydrographs for each APP well shall be submitted as part of the Annual Report.

8.4.2.3 Comparison of Groundwater Quality to Permit ALs and AQLs

Data from each round of samples shall be compared to the established ALs and AQLs in Table 13.2-5 in Section 13.2, to determine appropriate response actions in accordance with this permit and specified contingency actions for exceeded ALs and AQLs.

8.5 Analytical Methodology

All samples collected for compliance monitoring shall be analyzed using Arizona state-approved methods. If no state-approved method exists, then any appropriate EPA-approved method shall be used. Regardless of the method used, the detection limits must be sufficient to determine compliance with the regulatory limits of the parameters specified in this permit. If all methods have detection limits higher than the applicable limit, the permittee shall follow the contingency requirements in Section 9.0 and may propose “other actions” including amending the permit to set higher limits. Analyses shall be performed by a laboratory licensed by the Arizona Department of Health Services, Office of Laboratory Licensure and Certification unless exempted under A.R.S. § 36-495.02. For results to be considered valid, all analytical work shall meet quality control standards specified in the approved methods. A list of Arizona state-certified laboratories can be obtained at the address below:

Arizona Department of Health Services
Office of Laboratory Licensure and Certification
250 North 17th Avenue
Phoenix, AZ 85007
Phone: (602) 364-0720

Operational and field samples do not require chain of custodies or Certified Analytical Laboratory Reports. Samples collected and analyzed for the Offsite Dose Calculation Manual (ODCM) shall be performed according to the ODCM protocols. Radiological analyses not required by the ODCM shall be performed by a laboratory licensed by the Arizona Department of Health Services. The ODCM is required by Nuclear Regulatory Commission regulations to assure compliance with 10 CFR Part 20, 40 CFR Part 190, and Appendix I to 10 CFR Part 50. Electronic or hard copies of laboratory analyses and chain of custody forms shall be maintained at the permitted Facility for at least 10 years.

8.6 Installation and Maintenance of Monitoring Equipment

Monitoring equipment required by this permit shall be installed and maintained so that representative samples required by the permit can be collected. If new groundwater wells are determined to be necessary, the construction details shall be submitted to the ADEQ Groundwater Section for approval prior to installation and the permit shall be amended to include any new points.

8.7 Contingency Actions [A.R.S. § 49-243(K)(3), (K)(7) and A.A.C. R18-9-A204 and R18-9-A205]

At least one copy of this permit and the approved contingency and emergency response plan shall be maintained at the location where day-to-day decisions regarding the operation of the facility are made. The permittee shall be aware of and follow the contingency and emergency plan.

An AL that is exceeded or any violation of an AQL, DL, or other permit condition shall be reported to ADEQ following the reporting requirements in Section 10.3, Permit Violation and Alert Level Status Reporting.

Some contingency actions involve verification sampling. Verification sampling shall consist of the first follow-up sample collected from a location that previously indicated a violation or the exceedance of an AL. Collection and analysis of the verification sample shall use the same protocols and test methods to analyze for the pollutant or pollutants that exceeded an AL or violated an AQL. The permittee is subject to enforcement action for the

failure to comply with any contingency actions in this permit. Where verification sampling is specified in this permit, it is the option of the permittee to perform such sampling. If verification sampling is not conducted within the timeframe allotted, ADEQ and the permittee shall presume the initial sampling result to be confirmed as if verification sampling has been conducted. The permittee is responsible for compliance with contingency plans relating to the exceedance of an AL or violation of a DL, AQL or any other permit condition.

8.7.1 Exceeding of Alert Levels in Groundwater Monitoring [A.R.S. § 49-243(K)(3), (K)(7) and A.A.C. R18-9-A204 and R18-9-A205]

1. If an AL for a pollutant in Section 13.2, Table 13.2-5, has been exceeded in groundwater monitoring, the permittee may conduct verification sampling within 5 business days of becoming aware of an AL being exceeded in a POC or Perimeter well. The permittee may use the results of another sample taken between the collection date of the sampling event with the exceeded value and the date of receiving the result as verification rather than resampling.
2. Exceedances of chromium and nickel have been linked to pump corrosion. For alert level exceedances of either chromium or nickel accompanied by elevated concentrations of the other parameter, the permittee may consider replacing the pump prior to the next routine sampling event as a contingency action. If the removed pump shows evidence of corrosion and the results of the next routine sampling show chromium and nickel levels below the ALs, Sections 3 through 7 would not be required. If any condition of 8.7.1(2) is not met, Sections 3 through 7 still apply.
3. Contingency actions, monitoring and reporting are not required for alert level exceedances for metals resulting from failure to achieve reporting limits less than the applicable alert level in the following well (PV-R2AR) provided the permittee has requested the lowest possible reporting limits from the laboratory. Contingency monitoring in the following well (PV-R2AR) shall resume, if necessary, with the first set of sampling data after the submittal of the implementation demonstration report and, if necessary, amendment application per Section 12 of the permit.
4. If verification sampling confirms the AL being exceeded or if the permittee opts not to perform verification sampling, then the permittee shall increase the frequency of monitoring. For POC wells, increase the monitoring frequency from *semiannual* to *monthly* for an exceeded AL parameter. For Perimeter wells, increase the monitoring frequency from *semiannual* to *quarterly* for an exceeded AL parameter. In addition, the permittee shall immediately initiate an investigation of the cause of the AL being exceeded, including inspection of all discharging units and all related pollution control devices, review of any operational and maintenance practices that might have resulted in an unexpected discharge, and hydrologic review of groundwater conditions including upgradient water quality.
5. The permittee shall initiate actions identified in this section of the permit and additional measures as needed and applicable in Section 9.4, Emergency Response and Contingency Requirements for Unauthorized Discharges, to resolve any problems identified by the investigation which may have led to an AL being exceeded. To implement any other corrective action the permittee shall obtain prior approval from ADEQ according to Section 9.5, Corrective Actions. Alternatively, the permittee may submit a technical demonstration, subject to written approval by the Groundwater Section, that although an AL is exceeded, pollutants are not reasonably expected to cause a violation of an AQL. The demonstration may propose a revised AL or monitoring frequency for approval in writing by the Groundwater Section.
6. Submit a report pursuant to Section 10.3.2.
7. Upon review of the submitted report, the Department may amend the permit to require additional monitoring, increased frequency of monitoring, or other actions.
8. The increased monitoring required as a result of ALs being exceeded may be reduced to the routine semiannual frequency if the results of 4 consecutive sampling events demonstrate that no parameters exceed the AL or upon approval by ADEQ.

8.7.2 Aquifer Quality Limit Violation [A.R.S. § 49-243(K)(3), (K)(7) and A.A.C. R18-9-A204 and R18-9-A205]

1. If an AQL set in groundwater monitoring tables in Section 13.2, Table 13.2-5, has been exceeded, the permittee may conduct verification sampling within 5 business days of becoming aware of an AQL being exceeded. The permittee may use the results of another sample taken between the collection date of the sampling event with the exceeded value and the date of receiving the result as verification.
2. Exceedances of chromium and nickel have been linked to pump corrosion. For AQL exceedances of either chromium or nickel accompanied by elevated concentrations of the other parameter, the permittee may consider replacing the pump prior to the next routine sampling event as a contingency action. If the removed pump shows evidence of corrosion and the results of the next routine sampling show chromium and nickel levels below the AQLs, Sections 3 through 6 would not be required. If any condition of 8.7.2.2 is not met, Sections 3 through 6 still apply.
3. Contingency actions, monitoring and reporting are not required for aquifer quality limit exceedances for metals resulting from failure to achieve reporting limits less than the applicable AQL in the following well (PV-R2AR) provided the permittee has requested the lowest possible reporting limits from the laboratory. Contingency monitoring in the following well (PV-R2AR) shall resume, if necessary, with the first set of sampling data after the submittal of the detection limit implementation demonstration report and, if necessary, amendment application per Section 12 of the permit.
4. If verification sampling confirms that the AQL is violated for any parameter or if the permittee opts not to perform verification sampling, then the permittee shall notify the ADEQ Groundwater Section in writing in accordance with Section 10.3, Permit Violation and Alert Level Status Reporting, and increase the frequency of monitoring from semiannual to monthly.

In addition, the permittee shall immediately initiate an evaluation for the cause of the violation, including inspection of all discharging units and all related pollution control devices, and review of any operational and maintenance practices that might have resulted in unexpected discharge. The evaluation shall include a hydrogeologic assessment of groundwater flow direction, adequacy of the monitoring network, and which may at the permittee's discretion include sampling of up-gradient monitoring wells to show that concentrations are increasing in ambient groundwater. For verified exceeded values, a Hydrogeologic Assessment Report shall be submitted to ADEQ within 180 calendar days from the date of notification of the exceeded value.

The Hydrogeologic Assessment Report may include a demonstration that the exceeded value was not caused or contributed by pollutants discharged from an APP-regulated facility, if such a demonstration can be made. The Report shall assess whether the exceedance is due to natural or anthropogenic causes. If the exceeded values are related to an APP-regulated facility or results are inconclusive, the permittee shall assess the nature and extent of the discharge resulting in the value or other possible sources. If the exceeded value is related to an APP discharging facility and BADCT failure, the Assessment Report should evaluate options for restoring or upgrading BADCT as needed to correct the condition. The Hydrogeologic Assessment Report and related investigations shall become the basis for adjusting permit conditions if needed or designing and implementing corrective action plans.

The permittee shall follow reporting requirements in Section 10.3, Permit Violation and Alert Level Status Reporting, which includes a summary of the findings of the investigation, the cause of the violation, and actions taken to resolve the problem. A verified exceedance of an AQL will be considered a violation unless the permittee demonstrates within 30 calendar days that the exceedance was not caused or contributed to by pollutants discharged from the facility. Unless the permittee has demonstrated that the exceedance was not caused or contributed to by pollutants discharged from the facility, the permittee shall consider and ADEQ may require corrective action that may include control of the source of discharge, cleanup of affected soil, surface water or groundwater, and mitigation of the impact of pollutants on existing uses of the aquifer. Corrective actions shall be: specifically identified in this permit; included in an ADEQ approved contingency plan; or separately approved according to Section 9.5, Corrective Actions.

5. Upon review of the submitted reports including the Hydrogeologic Assessment Report, the Department may amend the permit to require additional monitoring, additional monitoring wells, increased frequency of monitoring, or other actions.
6. The permittee shall notify any downstream or downgradient users who may be directly affected by the discharge.

9.0 CONTINGENCY PLAN REQUIREMENTS [A.R.S. § 49-243(K)(3), (K)(7) and A.A.C. R18-9-A204 and R18-9-A205]

9.1 General Contingency Plan Requirements

At least one copy of the approved contingency and emergency response plan(s) submitted in the application shall be maintained at the location where day-to-day decisions regarding the operation of the facility are made. The permittee shall be aware of and follow the contingency and emergency plans.

Any AL that is exceeded or any violation of an AQL, DL, or other permit condition shall be reported to ADEQ following the reporting requirements in Section 10.3, Permit Violation and Alert Level Status Reporting.

Some contingency actions involve verification sampling. Verification sampling shall consist of the first follow-up sample collected from a location that previously indicated a violation or the exceedance of an AL. Collection and analysis of the verification sample shall use the same protocols and test methods to analyze for the pollutant or pollutants that exceeded an AL or violated an AQL. The permittee is subject to enforcement action for the failure to comply with any contingency actions in this permit. Where verification sampling is specified in this permit, it is the option of the permittee to perform such sampling. If verification sampling is not conducted within the timeframe allotted, ADEQ and the permittee shall presume the initial sampling result to be confirmed as if verification sampling has been conducted. The permittee is responsible for compliance with contingency plans relating to the exceedance of an AL or violation of a DL, AQL or any other permit condition.

9.2 Exceeding of Alert Levels

Refer to sections of permit for specific discharging facility.

9.3 Discharge Limitations Violations

Refer to sections of permit for specific discharging facility.

9.4 Emergency Response and Contingency Requirements for Unauthorized Discharges [A.R.S. § 49-201(12) and A.R.S. § 49-241]

9.4.1 Duty to Respond

The permittee shall act immediately to correct any condition resulting from a discharge pursuant to A.R.S. § 49-201(12) if that condition could pose an imminent and substantial endangerment to public health or the environment.

9.4.2 Discharge of Hazardous Substances or Toxic Pollutants

In the event of any unauthorized discharge pursuant to A.R.S. §49-201(12) of suspected hazardous substances (A.R.S. § 49-201(19)) or toxic pollutants (A.R.S. §49-243(I)) on the facility site, the permittee shall promptly isolate the area and attempt to identify the discharged material. The permittee shall record information, including name, nature of exposure and follow-up medical treatment, if necessary, on persons who may have been exposed during the incident. The permittee shall notify the ADEQ Groundwater Section within 24-hours upon discovering the discharge of hazardous material which: a) has the potential to cause an AWQS or AQL to be exceeded; or b) could pose an endangerment to public health or the environment.

9.4.3 Discharge of Non-hazardous Materials

In the event of any unauthorized discharge pursuant to A.R.S. § 49-201(12) of non-hazardous materials from the facility, the permittee shall promptly attempt to cease the discharge and isolate the discharged material. Discharged material shall be removed and the site cleaned up as soon as possible. The permittee shall notify the ADEQ Groundwater Section within 24-hours upon discovering the

discharge of non-hazardous material which: a) has the potential to cause an AQL to be exceeded; or b) could pose an endangerment to public health or the environment.

9.4.4 Reporting Requirements

The permittee shall submit a written report for any unauthorized discharges reported under Section 9.4, Emergency Response and Contingency Requirements for Unauthorized Discharges, to ADEQ in accordance with Section 9.3, Discharge Limitation Violations, within 30 calendar days of the discharge or as required by subsequent ADEQ action. The report shall summarize the event, including any human exposure, and facility response activities and include all information specified in Section 10.3, Permit Violation and Alert Level Status Reporting. If a notice is issued by ADEQ subsequent to the discharge notification, any additional information requested in the notice shall also be submitted within the time frame specified in that notice. Upon review of the submitted report, ADEQ may require additional monitoring or corrective actions.

9.4.5 Sampling of Plant Upset Releases/Unauthorized Discharges

The permittee shall characterize unauthorized discharges for the parameters listed in Section 13.3, Table 13.3-3, Contingency Plant Upset and Overtopping Releases to Unlined Facilities Sampling.

9.5 Corrective Actions

Specific contingency measures and actions identified in the approved contingency plans referenced in Section 13 and Sections 3.0, 4.0, 5.0, 6.0, 7.0, and 8.0 have already been approved by ADEQ and do not require written approval to implement. Written notification requirements shall be followed in accordance with Section 10.3, Permit Violation and Alert Level Status Reporting, or Section 9.4, Emergency Response and Contingency Requirements for Unauthorized Discharges.

With the exception of emergency response actions taken under Sections 3.5, 4.5, 5.5, 6.5, 7.5, and 8.5 the permittee shall obtain written approval from the Groundwater Section prior to implementing a corrective action to accomplish any of the following goals in response to exceeding an AL or violation of an AQL, DL, or other permit condition:

1. Control of the source of an unauthorized discharge;
2. Soil cleanup;
3. Cleanup of affected surface waters;
4. Cleanup of affected parts of the aquifer;
5. Mitigation to limit the impact of pollutants on existing uses of the aquifer.

Within 30 calendar days of completion of any corrective action, the operator shall submit to the ADEQ Groundwater Section, a written report describing the causes, impacts, and actions taken to resolve the problem.

10.0 REPORTING AND RECORDKEEPING REQUIREMENTS [A.R.S. § 49-243(K)(2) and A.A.C. R18-9-A206(B) and R18-9-A207]

10.1 Self-monitoring Report Forms

1. When submitting hard copy, the permittee shall complete the SMRFs provided by ADEQ, and submit them to the Groundwater Section. The permittee shall use the format devised by ADEQ.
2. The permittee shall complete the SMRF to the extent that the information reported may be entered on the form. If no information is required during a reporting period, the permittee shall enter "not required" on the SMRF include an explanation, and submit the report to the Groundwater Section.
3. The following tables contained in Section 13 list the parameters to be monitored and the frequency for reporting results on the SMRFs.
 - a. WRF and Cooling Tower Sludge Disposal Landfill
 - b. POC Well PV-R2AR
4. In addition to the SMRF, the information contained in A.A.C. R18-9-A206(B)(1) shall be included for exceeding an alert level (AL) or violation of an Aquifer Quality Limit (AQL), discharge limit (DL), or any other permit condition being reported in the current reporting period.

SMRFs are not required for inspections in accordance with Section 13.2, Table 13.2-1, Surface Impoundment and BADCT Performance Standard Inspection & Alert Monitoring. These results shall

be recorded in the log book, and reporting performed in accordance with Section 10.3, Permit Violation and Alert Level Status Reporting, in response to exceeding a performance AL.

10.2 Operation Inspection / Log Book Recordkeeping

A signed copy of this permit shall be maintained at all times at the location where day-to-day decisions regarding the operation of the facility are made. A log book (paper copies, forms or electronic data) of the inspections and measurements required by this permit shall be maintained at the location where day-to-day decisions are made regarding the operation of the facility. The log book shall be retained for 10 years from the date of each inspection, and upon request, the permit and the log book shall be made immediately available for review by ADEQ personnel. The information in the log book shall include, but not be limited to, the following information as applicable:

1. Name of inspector;
2. Date and shift inspection was conducted;
3. Condition of applicable facility components;
4. Any damage or malfunction, and the date and time any repairs were performed;
5. Documentation of sampling date and time;
6. Any other information required by this permit to be entered in the log book; and
7. Monitoring records for each measurement shall comply with R18-9-A206(B)(2).

Certified analytical reports (CARs) shall be maintained in the facility APP records filed and maintained by sampling event date and sampling event type. These CARs shall be provided to the Groundwater Section within 30 calendar days of request.

Hard or electronic reports of the inspections and measurements required by this permit shall be maintained at the location where day-to-day decisions are made regarding the operation of the facility. The hard or electronic reports shall be retained for 10 years from the date of each inspection, and upon request, the permit and the hard or electronic reports shall be made immediately available for review by ADEQ personnel.

The information in the hard or electronic reports shall include, but not be limited to, the following information as applicable:

- a. Name of inspector and/or sampler;
- b. Date and shift inspection was conducted;
- c. Condition of applicable facility components;
- d. Any damage or malfunction, and the date and time any repairs were performed;
- e. Documentation of sampling date and time;
- f. Names of samples and laboratory identification number;
- g. Static water level in monitoring well prior to sampling;
- h. Sampling method;
- i. Purging volume (if any);
- j. Indicator parameters including field conductance ($\mu\text{mhos/cm}$), field temperature (EC), and field pH (standard units);
- k. Date of analysis;
- l. Preservation and transportation procedures;
- m. The name of the analytical facility; and
- n. Any other information as specified by this permit to be entered in the facility Logbook/recordkeeping file.

10.3 Permit Violation and Alert Level Status Reporting

1. The permittee shall notify the Groundwater Section in writing within 5 business days (except as provided in Section 9.4, Emergency Response and Contingency Requirements for Unauthorized Discharges) of becoming aware of a violation of any permit condition, DL or AL being exceeded.
2. The permittee shall submit a written report to the Groundwater Section within 45 calendar days of becoming aware of the violation of any permit condition, DL or AL being exceeded. The report shall document all of the following:

- a. Identification and description of the permit condition for which there has been a violation and a description of its cause.
- b. The period of violation including exact date(s) and time(s), if known, and the anticipated time period during which the violation is expected to continue.
- c. Any corrective action taken or planned to mitigate the effects of the violation, or to eliminate or prevent a recurrence of the violation.
- d. Any monitoring activity or other information which indicates that any pollutants would be reasonably expected to cause a violation of an AWQS.
- e. Proposed changes to the monitoring which include changes in constituents or increased frequency of monitoring.
- f. Description of any malfunction or failure of pollution control devices or other equipment or processes.
- g. Copies of CARs, chain of custody forms, and a description of any sampling and monitoring methods used to determine, verify or assess compliance status.
- h. For exceeded ALs and AQLs in an APP monitoring well listed in tables in Section 8.1 or 8.2, the 45 day report submitted to ADEQ shall also contain the most recent contour maps for the appropriate aquifer.

For any condition lasting more than 90 calendar days, the permittee shall commence quarterly status reporting to keep ADEQ informed of the status of investigations, assessments, repairs, and corrective actions. Status reports shall be submitted to the Groundwater Section. The status reports shall provide an update on all response actions and a schedule for completing response actions. These reports shall be submitted until such time as the condition is corrected.

10.3.1 Methane Gas Exceedance Reporting

The following notifications are required if there is a methane gas exceedance:

1. Within twenty-four (24) hours or one (1) business day of any methane gas exceedance where the gas concentration in facility structures exceeds twenty-five percent (25%) of the lower explosive limit or gas concentrations at the landfill boundary exceed the lower explosive limit, the permittee shall notify the ADEQ Solid Waste Unit.
2. Within seven (7) days of detection, the permittee shall place in the operating record a description of the steps taken to protect human health. A copy of this description shall be sent to the ADEQ Solid Waste Unit.

Within sixty (60) days of detection of any methane gas exceedance, a remediation plan shall be implemented and a copy of the plan placed in the operating record. A copy of the plan, accompanied by a notification that the plan has been implemented, shall be sent to the ADEQ Solid Waste Unit.

10.4 Operational, Other or Miscellaneous Reporting

10.4.1 Annual Reporting Requirements

The goal and purpose of annual reporting requirements are to allow the permittee and ADEQ to keep current the status of the permit compliance and performance under this permit to assure the public that human health and the environment including future and foreseeable drinking water uses of groundwater are protected through implementation of all provisions of this permit. The secondary purpose is to allow constant assessment of the adequacy of this permit in achieving the primary goal and to allow rapid determinations to be made regarding the potential need for revision or amendment of the permit and more specifically, the monitoring provisions of this permit. Appropriate components of the report required by this Section shall be sealed by an Arizona-registered Geologist or Professional Engineer, in accordance with Arizona Board of Technical Registration (BTR) requirements.

A. Annual Monitoring and Compliance Report

Each year the permittee shall submit a report to the Groundwater Section summarizing the results of the facility's performance and include a copy of the Radiological

Environmental Monitoring Program annual report. The report shall be divided into Groundwater Monitoring, Impoundment Monitoring, Sludge Monitoring, and Compliance Status under this permit. The report shall also include identification and discussion of any laboratory results that fall outside of the laboratory's QA/QC criteria and the detection levels required by this permit. The report shall contain the following sections with the specified information:

1. Groundwater Monitoring

This section of the report shall contain the following information:

- a. Semiannual shallow groundwater maps.

Groundwater contouring may be performed by hand or by using an accepted computer program/ model. All calculations for contouring shall be included in the submittal.

2. Impoundment Monitoring

This section of the report shall contain the following information:

- a. LCRS sump monitoring results;
- b. Summaries of analytical results;
- c. Summary of maintenance and repair activities;
- d. Summary of the results of all liner leakage; and,
- e. Summary tables of all basin, impoundment and reservoir data which allows data to be readily compared to leakage and discharge quality ALs and previous data.

3. Sludge Monitoring

This section of the report shall contain the following information:

- a. WRF sludge monitoring analytical results;
- b. Cooling Tower analytical results;
- c. Summary of any exceedances of permit limits for sludge quality;
- d. Description of any violations of the ARRA Special License for sludge radioisotope limits; and,
- e. The Radiological Environmental Monitoring Program Report (REMP).

4. Methane Monitoring

This section of the report shall contain the following information:

- a. Methane monitoring results

10.4.2 Ambient Groundwater Monitoring Reports

An Ambient Groundwater Monitoring Report is required for each new well installed that is incorporated into the monitoring program of this permit.

10.4.2.1 Reporting Requirements

The Ambient Groundwater Monitoring Report is due 45 calendar days from the conclusion of the ambient groundwater monitoring period (no less than 8 quarterly rounds) for each well. This report shall be accompanied by a request for permit amendment and fees to establish ALs and AQLs for the new well, a spreadsheet of the groundwater data for the well and calculations used to evaluate the data statistically, and ALs and AQLs based on statistical assessment of 8 rounds of groundwater data. Appropriate components of the report shall be sealed by an Arizona-registered Geologist or Professional Engineer, in accordance with Arizona BTR requirements.

The Ambient Groundwater Monitoring Report shall also include groundwater elevation measurements, groundwater flow calculations and semiannual groundwater contour maps prepared by hand or using an accepted computer program/ model for each round of samples using elevations collected for all on-site monitoring wells in the same aquifer as the new well. The Ambient Groundwater Monitoring Report shall include an assessment of groundwater flow, the adequacy

of the proposed POC location(s) with respect to groundwater flow and, if appropriate, potential influence of production well pumpage on variations in groundwater flow direction.

10.4.2.2 Establishing ALs and AQLs

Upon review of the Ambient Groundwater Monitoring Report, ADEQ will set ALs and AQLs for all constituents listed as "Reserved" or "To be Determined".

For each of the monitoring constituents for which a numeric AWQS has been adopted, the AQL shall be set using ADEQ's technical guidance, the ADEQ approved flow chart, or other approved method to evaluate the ambient groundwater quality data collected during the ambient sampling period. The AQL shall be set at the numeric AWQS or at the calculated value, whichever is greater. For those constituents without established AWQS, the AQL shall remain designated "NE" or "Not Established". If the statistical value is used as the AQL, no AL shall be proposed for that constituent. If the AWQS is used as the AQL, the AL shall be set at 90 percent of the AWQS, unless the more conservative statistically calculated value is agreed to instead to allow early warning in areas where aquifer properties may warrant additional warning time.

10.4.3 Well Installation and Well Abandonment Reports

A. Well Installation Report

Within 90 calendar days of completing installation of any new monitoring well drilled for this permit, the permittee shall submit a well installation report to the Groundwater Section. Appropriate components of the report shall be sealed by an Arizona-registered Geologist or Professional Engineer, in accordance with Arizona BTR requirements. The well installation report shall include the following:

1. ADWR Notice of Intent and Well Drilling Report
2. Boring Log and Well As-built Diagram
3. Total Depth of Well - measured after installation
4. Geophysical Log Reports
5. Description of Well Drilling Method
6. Description of Well Development Method(s)
7. Summary of Analytical Results for First Groundwater Sample Collected
8. Surveyed coordinates for the position of the new well
9. Elevation of top of well casing or sounding tube (whichever is used as the fixed depth to water measuring point) and ground surface

B. Well Abandonment Report

All monitoring wells shall be abandoned at the time of facility closure or end of the post-closure monitoring period. Several wells shall be replaced as part of this permit or abandoned in accordance with ADEQ-approved requests. Within 90 calendar days of abandoning a well, the permittee shall submit a well abandonment report to the Groundwater Section. Appropriate components of the report shall be sealed by an Arizona-registered Geologist or Professional Engineer, in accordance with Arizona BTR requirements. Well abandonment records shall be provided to ADEQ within 90 calendar days of monitoring well abandonment and shall include:

1. Copies of ADWR Notice of Intent to Abandon;
2. Copies of ADWR Abandonment Reports;
3. A description of the methods used to seal the well casing and the perforated or screened interval of the well; and,
4. Surveyed location of the abandoned well, including ground surface elevation at former well location.

10.4.4 Groundwater Withdrawal and Updated Well Inventory Reports

In accordance with Section 12.2, Completed Compliance Schedule Items, the permittee submitted a report to ADEQ with information regarding groundwater withdrawal in the on-site water supply wells and an updated well inventory map and table for all wells located within 2 miles in the down gradient and cross gradient direction of the PVNGS property boundaries. Contingency requirements include updating of this information at the request of ADEQ or as a contingency measure for exceedances of AQLs in POC well. If so required, this updated information shall be submitted to ADEQ within 90 calendar days of agency request. Appropriate components of the report shall be sealed by an Arizona-registered Geologist or Professional Engineer, in accordance with Arizona BTR requirements.

10.5 Reporting Location

All hard copy SMRFs shall be submitted to:
Arizona Department of Environmental Quality
Groundwater Section
Mail Code: 5415B-3
1110 W. Washington Street
Phoenix, AZ 85007

Or

Through the myDEQ portal accessible on the ADEQ website at:
<http://www.azdeq.gov/welcome-mydeq>

All documents required by this permit to be submitted to the Groundwater Section shall be directed to:

Arizona Department of Environmental Quality
Groundwater Section
Mail Code: 5415B-3
1110 W. Washington Street
Phoenix, AZ 85007

All documents required by this permit to be submitted to the Solid Waste Unit shall be directed to:

Arizona Department of Environmental Quality
Waste Programs Division
Solid/Hazardous Waste Section
1110 W. Washington Street
Phoenix, AZ 85007

10.6 Reporting Deadline

10.6.1 Quarterly Reporting Deadline

The following table lists the quarterly report due dates:

Monitoring conducted during quarter:	Quarterly Report due by:
January-March	April 30
April-June	July 30
July-September	October 30
October-December	January 30 of the following year

10.6.2 Semi-Annual and Annual Monitoring Report Due Dates

The following table lists the semi-annual and annual report due date:

Report Type	Monitoring Period	Report due by:
Semi-Annual	January-June	July 30

Report Type	Monitoring Period	Report due by:
Semi-Annual	July-December	January 30 of the following year
Annual	January-December	January 30 of the following year

The following table lists the due date for the annual report per Section 10.4.1.A:

Report Type	Monitoring Period	Report due by:
Annual	January-December	May 15 of the following year

10.7 Changes to Facility Information in Section 1.0

The Groundwater Section shall be notified within 10 business days of any change of facility information including Facility Name, Permittee Name, Mailing or Street Address, Facility Contact Person or Emergency Telephone Number.

11.0 GENERAL CLOSURE AND POST-CLOSURE REQUIREMENTS

11.1 Temporary Cessation [A.R.S. §49-243(K)(8) and A.A.C. R18-9-A209(A)]

The permittee shall give written notice to the Groundwater Section before ceasing operation of any facility authorized to discharge by this area-wide permit for a period of 60 calendar days or greater. The permittee shall take the following measures upon temporary cessation:

1. Submittal of Self-Monitoring Report Forms (SMRFs) is still required; report “temporary cessation” in the comment section.

If this permit does not elsewhere specify temporary cessation measures, at the time of notification the permittee shall submit for ADEQ approval a plan for maintenance of discharge control systems and for monitoring during the period of temporary cessation. Immediately following ADEQ’s approval, the permittee shall implement the approved plan. If necessary, ADEQ shall amend permit conditions to incorporate conditions to address temporary cessation. During the period of temporary cessation, the permittee shall provide written notice to the Groundwater Section of the operational status of the facility every three years. If the permittee intends to permanently cease operation of any facility, the permittee shall submit closure notification, as set forth in Section 11.2, Closure, below.

11.2 Closure [A.R.S. §§ 49-243(K)(6), 49-252 and A.A.C. R18-9-A209(B)]

For a facility addressed under this permit, the permittee shall give written notice of closure to the ADEQ Groundwater Section of the intent to cease operations without resuming an activity for which the facility was designed or operated. Submittal of SMRFs is still required; report “closure in process” in the comment section.

11.2.1 Closure Plan – General Requirements

Within 90 calendar days following notification of closure, the permittee shall submit for approval to the Groundwater Section, a Closure Plan which meets the requirements of A.R.S. §49-252 and A.A.C. R18-9-A209(B)(3)(a). Appropriate components of the plans and reports required by this Section shall be sealed by an Arizona-registered Geologist or Professional Engineer, in accordance with Arizona BTR requirements. The plan shall include conceptual drawings and cross-sections as needed to illustrate closure configurations for each section of this permit with closure requirements in addition to those below. If the closure plan achieves clean closure immediately, ADEQ shall issue a letter of approval to the permittee. If the closure plan contains a schedule for bringing the facility to a clean closure configuration at a future date, ADEQ may incorporate any part of the schedule as an amendment to this permit.

11.2.1.1 Abandonment of Wells and Piezometers

At the end of the post-closure monitoring period (proposed as 15 years unless closure reporting pertaining to source areas and groundwater quality indicates that a longer period is required), all wells shall be pressure grouted from the bottom to ground surface to ensure that cross-contamination is prevented and to provide an adequate seal with the surrounding formation. Well abandonment shall ensure that

the wells cannot cause or contribute to a violation of an AWQS after post-closure has been completed.

For wells with telescoping casing design the permittee shall attempt to pull the innermost/lowest casing string at the time of closure.

11.2.1.2 Miscellaneous Closure Requirements

Closure of the discharging facilities and associated piping designed to deliver material to the discharging facilities will generally consist of the following steps:

1. Removal, sampling, profiling, and proper off-site disposal of all material remaining in the impoundments, ponds, reservoirs and basins.
2. Inspection of the liners for obvious breaches prior to dismantling the impoundments.
3. Careful dismantling, sampling (where applicable and appropriate), profiling, and proper off-site disposal and/or reuse (if appropriate) of the liners, leakage detection systems, and impacted subgrade soils, if any.
4. Sampling and analysis of the subgrade to verify clean closure after removing the liner and other material from the impoundments
5. Backfilling the ponds and grading the closed site to promote surface drainage and to ensure that stormwater does not pond on top of the closed impoundments.
6. Landscaping the area in accordance with the surrounding environment at the time of closure and in accordance with site restoration requirements dictated by federal regulations.

11.2.2 Closure Completion

Upon completion of closure activities, the permittee shall give written notice to the Groundwater Section indicating that the approved Closure Plan has been implemented fully and providing supporting documentation to demonstrate that clean closure has been achieved (soil sample results, verification sampling results, groundwater data, as applicable). If clean closure has been achieved, ADEQ shall issue a letter of approval to the permittee at that time. If any of the following conditions apply, the permittee shall follow the terms of post-closure stated in this permit:

1. Clean closure cannot be achieved at the time of closure notification or within 1 year thereafter under a diligent schedule of closure actions;
2. Further action is necessary to keep the facility in compliance with AWQS at the applicable POC;
3. Continued action is required to verify that the closure design has eliminated discharge to the extent intended;
4. Remedial or mitigative measures are necessary to achieve compliance with Title 49, Ch. 2; and /or
5. Further action is necessary to meet property use restrictions.
6. SMRF submittals are still required until Clean Closure is issued.

11.2.3 Post-closure [A.R.S. §§ 49-243(K)(6), 49-252 and A.A.C. R18-9-A209(C)]

Post-closure requirements shall be established based on a review of facility closure actions and will be subject to review and approval by the Groundwater Section. A post-closure period of 15 years was originally estimated in the permit application. The strategies submitted and outlined in the original 2003 permit are for a goal of clean closure.

In the event clean closure cannot be achieved pursuant to A.R.S. §49-252, the permittee shall submit for approval to the Groundwater Section a Post-Closure Plan that addresses post-closure maintenance and monitoring actions at the facility. The Post-closure Plan shall meet all requirements of A.R.S. §§ 49-201(30) and 49-252 and A.A.C. R18-9-A209(C). Upon approval of the Post-closure Plan, this permit shall be amended or a new permit shall be issued to incorporate all post-closure controls and monitoring activities of the Post-closure Plan.

12.0 COMPLIANCE SCHEDULE

[A.R.S. § 49-243(K)(5) and A.A.C. R18-9-A208]

For each compliance schedule item listed below, the permittee shall submit the required information, including a cover letter that lists the compliance schedule items, to the Groundwater Section.

12.1 Active Compliance Schedule Items

No.	Description	Completion/ Submittal Due Date	Submittal Date* (add dates with permit amendments) day/month, year	Comments
A – RUBBISH/SLUDGE LANDFILLS				
A-1	The permittee shall submit a Methane Gas Monitoring Work Plan detailing construction details of monitoring probes.	Within 60 days of date of permit signature		No permit amendment is required
A-2	The permittee shall implement the approved Methane Gas Monitoring Work Plan.	Within 60 days of date of Work Plan Approval		No permit amendment is required
A-3	The permittee shall submit a Gas Monitoring Installation Report to include a copy of as-built construction diagrams and GPS coordinates.	Within 60 days of completion		No permit amendment is required
B – FINANCIAL DEMONSRTATION				
B-1	The permittee shall submit a demonstration that the financial assurance mechanism listed in Section 2.1, Financial Capability, remains viable. The demonstration shall include a statement that the closure and post-closure strategy has not changed, the discharging facilities listed in the permit have not been altered and discharging facilities have not been added.	April 2018 and every two years thereafter		

No.	Description	Completion/ Submittal Due Date	Submittal Date* (add dates with permit amendments) day/month, year	Comments
B-2	The permittee shall submit updated cost estimates for facility closure and post-closure, as per A.A.C. R18-9-A201(B)(5) and A.R.S. 49-243.N.2.a, and an updated financial assurance demonstration for the updated cost estimate as per A.A.C. R18-9-A203.	April 2022 and every 6 years thereafter.		

12.2 Completed Compliance Schedule Items (Next Page)

Description	Completion/ Submittal Due Date	Submittal Date* (add dates with permit amendments) day/month, year	Comments
GROUNDWATER QUALITY EVALUATION AND MONITORING WELLS			
5-Year Evaluation of Groundwater Trends	Every 5 years from the date of permit issuance for life of the Facility: May 15 th of 2014 – No longer needed all Facilities have prescriptive BADCT	<u>Submitted May 15, 2014</u>	Every 5 years the permittee shall evaluate monitoring data from the previous 5 years and assess whether changes are needed in the groundwater monitoring program to protect the drinking water aquifer and future and foreseeable uses of the drinking water aquifer. Findings shall be compiled by the permittee in a report to ADEQ and submitted by May 15 th and may be accompanied by a request for permit amendment for any changes to the monitoring program proposed by the permittee.
CLEAN CLOSURE SEDIMENTATION BASINS			
Establish clean closure of the two Sedimentation Basins	March 2017	<u>Submitted March 31, 2017</u>	Submit a Clean Closure Application
RUBBISH/SLUDGE LANDFILLS			
Update of Sludge and Rubbish Landfill Solid Waste Criteria	March 2017	Submitted March 31, 2017	Submit the following documentation for compliance with requirements of: <ul style="list-style-type: none"> • 40 CFR 257.3-8(a) for explosive gases • A.R.S. §49-771 [Restrictive Covenant] for both landfills • A.R.S. §49-772 [Location Restrictions] for both landfills
FINANCIAL DEMONSRTATION			
Provide a revised closure cost based upon comments from LTF #62356	March 2017	Submitted March 31, 2017	Submit a revised closure cost estimate
New Monitoring Well Installation, Monitoring and Ambient Reporting			
Submit Ambient Groundwater Monitoring Report APP-23	May 11, 2015	Submitted May 7, 2015	Submit Ambient Monitoring Reports for North Well. The report(s) shall propose ALs for these wells based on 8 rounds of quarterly sampling data.
Submit a Request for Amendment to Set ALs for APP-23	May 11, 2015	Submitted May 7, 2015	Submit a Request to Amend the Area-wide Permit to add in ALs and AQLs for North Well
1-Year Evaluation of feasibility of using alternative analytical methods or method modifications to lower DL for antimony, beryllium, cadmium and thallium in APP19 and APP-21.	April 7, 2015	Submitted April 3, 2015	The permittee shall submit a permit amendment within 90 days of determining whether any alternative method or modifications to analytical methods are commercially available to reduce the ALs of specific analytes to 90% of each of the analytes specific AWQS. If analytical methods are not found to be commercially available to reduce the ALs of specific analytes to 90% of each analytes specific AWQS, no further action is required.

Description	Completion/ Submittal Due Date	Submittal Date* (add dates with permit amendments) day/month, year	Comments
1-Year Evaluation of the feasibility of using alternative analytical methods or method modifications to lower the DL for metals in wells, APP-15, APP-18, PV-14H, PV-193A, PV-195A and PV-R2AR.	April 7, 2015	Submitted April 3, 2015	If any alternative method or modification to analytical methods are commercially available for reporting limits to meet current ALs, no further action is required. If successful methods are not found to be commercially available, the permittee shall submit a significant permit amendment within 90 days of this determination to set higher limits of specific analytes for wells APP-15, APP-18, PV-14H, PV-193A, PV-195A and PV-R2AR as necessary. The existing contingency exemption for these, as described in Sections 8.8.1 and 8.8.2 shall remain in effect until the final disposition of the amendment by ADEQ.
Complete the study of reporting limits for metals in wells with high total dissolved solids (TDS)	Within one year of the ADEQ approval of the workplan	July 23, 2013	The permittee shall conduct the investigation into reporting limits as described in the workplan approved by ADEQ.
Submit a report summarizing the findings of the study on reporting limits for metals in wells with high total dissolved solids (TDS) and submit a permit amendment application	Within 60 days of the completion of the study	July 23, 2013	The permittee shall submit a report of the findings of the investigation including, as applicable, technical approach, results (including any analytical data), statistical or other data analyses, conclusions and recommendations. If necessary, the permittee shall submit an application to amend the permit to incorporate the findings of the investigation with the report.
Submit Ambient Groundwater Monitoring Reports for APP-19, 20, 21, and 22	May 11, 2013	May 3, 2013	Submit Ambient Monitoring Reports for wells listed above (APP-19, 20, 21, and 22). The report(s) shall propose ALs for these wells based on 8 rounds of quarterly sampling data.
Submit a Request for Amendment to Set ALs for APP-19, 20, 21, and 22	May 11, 2013	May 3, 2013	Submit a Request to Amend the Area-wide Permit to add in ALs and AQLs for APP-19, APP-20, APP-21, and APP-22
Submit Well installation report APP-23	April 30, 2013	March 14, 2013	In accordance with Section 10.4.4
Initiate Ambient Groundwater Monitoring in APP-23	January 31, 2013	January 30, 2013	Collect 8 quarterly rounds and no more than 12 monthly rounds of ambient groundwater samples after well installation.
Notification of EP1 Out of Service	December 31, 2012	December 23, 2012	The permittee shall submit written notification to ADEQ of the date of the initiation of drainage of EP 1 for refurbishing.
Submittal of Schedule for Completing Repairs on Evaporation Pond 1 (EP1)	December 31, 2012	December 20, 2012	Provide details from repair of EP1 that includes a schedule extending out no longer than 5 years for completing the redesign and repair of EP1.
Install APP-23	December 30, 2012	December 12, 2012	

Description	Completion/ Submittal Due Date	Submittal Date* (add dates with permit amendments) day/month, year	Comments
Workplan for study of reporting limits for metals in wells with high total dissolved solids (TDS)	Submit 90 days after permit issuance	January 23, 2012	Investigate analytical methods and laboratories to identify an analytical method and laboratory capable of achieving reporting limits less than the Alert Levels and Aquifer Quality Limits for metals in the following wells APP-15, APP-18, APP-19, PV-14H, PV-34H, PV-193A, PV195A and PV-R2AR with high total dissolved solids. Workplan shall include an evaluation of the hydrogeology and proposed sampling methodology.
EP2 Final Construction Report and Engineer's Certificate of Completion.	Submit 180 calendar days after completion of construction.	November 3, 2011	The report shall include the results of compaction testing and shall verify that the impoundment and subgrade were constructed in accordance with ADEQ-approved plans and this permit and that seams and welds have passed required testing. The report shall document liner installation QA/QC procedures (including seam/weld testing and electrical testing of the primary conductive liner) and final as-built plans for Evaporation Pond 2A, 2B and 2C and inspection results for all pollution control components relating to the wastewater discharge and treatment processes associated with EP2. The submittal shall include the Engineer's Certificate of Completion for EP2.
EP1 Final Construction Report and Engineer's Certificate of Completion.	Submit 180 calendar days after completion of construction.	<u>April 23, 2014</u>	The report shall include the results of compaction testing, shall verify that the impoundment and subgrade were constructed in accordance with ADEQ-approved plans and this permit, and document that seams and welds have passed required testing. The report shall document liner installation QA/QC procedures (including seam/weld testing and electrical testing of the primary conductive liner) and final as-built plans for all EP1 cells and inspection results for all pollution control components relating to the wastewater discharge and treatment processes associated with EP1. The submittal shall include the Engineer's Certificate of Completion for EP1. ADEQ approved the report on May 29, 2014.
Submit Ambient Groundwater Monitoring Report PV 173R	July 30, 2011	March 31, 2011	In accordance with Section 10.4.2.
Submit Well Installation Report APP 19, 20, 21, and 22	April 30, 2011	March 22, 2011	In accordance with Section 10.4.4.
Initiate Ambient Groundwater Monitoring in APP 19, 20, 21, and 22	January 31, 2011	January 24, 2011	Collect 8 quarterly rounds of ambient groundwater samples after well installation.
Install APP 17	December 30, 2010	January 6, 2010	
Submit Well Installation Report APP 17	April 30, 2011	April 6, 2010	In accordance with Section 10.4.4.
Initiate Ambient Groundwater Monitoring in APP17	January 31, 2011	January 6, 2010	Collect 12 monthly rounds of ambient groundwater samples after well installation.
Submit Ambient Groundwater Monitoring Report APP-17	July 30, 2011	March 11, 2011	

Description	Completion/ Submittal Due Date	Submittal Date* (add dates with permit amendments) day/month, year	Comments
Install APP 18	December 30, 2010	January 7, 2010	
Submit Well Installation Report APP 18	April 30, 2011	April 6, 2010	In accordance with Section 10.4.4.
Initiate Ambient Groundwater Monitoring in APP 18	January 31, 2011	January 7, 2010	Collect 12 monthly rounds of ambient groundwater samples after well installation.
Submit Ambient Groundwater Monitoring Report APP 18	March 25, 2011	March 25, 2011	
Submit Ambient Groundwater Monitoring Report APP 13, 14, 15	December 30, 2010	December 23, 2009	In accordance with Sections 8.5.1 and 10.4.2, within 120 days from conclusion of the ambient groundwater monitoring period and before date listed here.
Submit Well Installation Reports APP 16 and PV 173R	April 30, 2010	February 26, 2010	In accordance with Section 10.4.4 and before date listed here.
Initiate Routine Groundwater Monitoring in New wells APP 16 and PV 173R	April 30, 2010	February 26, 2010	In accordance with Section 8.5.2
Submit Ambient Groundwater Monitoring Report APP 16	July 30, 2011	March 11, 2011	
Install PV-APP 19, 20, 21, and 22	December 30, 2010	December 22, 2010	
Submit Request for Amendment to Revise APP Monitoring Program and Required Updated Financial Assurance Demonstration Information	June 30, 2010	December 18, 2009	Submit a Request for Amendment to Area-wide APP to revise the monitoring program to reflect the number of discharging facilities employing prescriptive BADCT and current understanding of site conditions. Request should include revised alert level calculations using ADEQ approved methodologies including mean plus two standard deviations and Pro UCL software and workplans with proposed well locations and designs for APP 17, APP 18, and APP 19. As part of this Request for Amendment, the permittee shall submit backup information required by rule A.A.C. R18-9-A201(5)(a) and (b) to support the closure costs for all nine APP facilities. If the estimate needs to be adjusted for inflation of anticipated scope to meet standards, the permittee shall provide corrected numbers.
Notification to ADEQ of Evaporation Pond 2 (EP2) Repair Schedule	September 30, 2010	December 17, 2009	Submit written notification to ADEQ no later than 9 months after the date in which EP2 was taken out of service of the schedule for completing repairs and the expected schedule for ceasing discharge to EP1 and initiating repair of EP1.
Submit Request for Amendment to Refurbish EP1	October 30, 2010	October 25, 2010	Submit Request for Amendment to Area-wide APP for refurbishment of EP1.
Evaporation Pond 2 (Cells 2A, 2B, 2C) Fluid Level Measuring Points for Table 17.2-2	June 30, 2010	June 30, 2010	Provide Latitude and Longitude for: 2A South Embankment (West Side) 2A South Embankment (East Side) 2B South Embankment 2B West Embankment 2C East Embankment

Description	Completion/ Submittal Due Date	Submittal Date* (add dates with permit amendments) day/month, year	Comments
Evaporation Pond 2 (Cells 2A, 2B, 2C) Fluid Level Measuring Points for Table 17.3-4	June 30, 2010	June 30, 2010	Provide Latitude and Longitude for: Composite Point West End of 2A Composite Point East End of 2A Composite Point West End of 2B Composite Point East End of 2B Composite Point East End of 2C

* The Submittal Date is the date the document is date stamped as received by the Groundwater Section.

** The date associated with an item marked as "Completed" represents the date that ADEQ completed review of the item/ document and approved the item. Items marked "Under Review" have been submitted in accordance with the compliance schedule and are still under agency review. Items marked "Initiated" means that the item was initiated in accordance with the requirements of the Compliance Schedule (for example all 8 rounds may not have been completed, but ambient monitoring was initiated as required). If there is no designation as "completed" or "under review" under the date entered, then the entered date indicates that the permittee complied with the submittal requirement.

13.0 TABLES OF MONITORING REQUIREMENTS

13.1 Pre-operational Monitoring (or Construction) Requirements

None

13.2 Compliance (or Operational) Monitoring

Table 13.2-1 – Surface Impoundment and BADCT Performance Standard Inspection & Alert Monitoring

Table 13.2-2 – Evaporation Ponds and Water Storage Reservoirs Flow Rate and LCRS Fluid Level
Monitoring Points

Table 13.2-3 – WSR and Evaporation Pond LCRS Monitoring Alert Levels

Table 13.2.4 – WRF and Cooling Tower Sludge Disposal Landfill Sludge Sampling Parameters

Table 13.2-5 – POC Well PV-R2AR, Semiannual Groundwater Monitoring

13.3 Contingency Monitoring

Table 13.3-1 – Contingency LCRS Monitoring, 85-acre WSR and 45-acre WSR

Table 13.3-2 – Contingency Plant Upset and Overtopping Releases to Unlined Facilities Sampling

Table 13.3-3 – Evaporation Ponds Contingency Wastewater Sampling Locations for Overtopping of the
Surface Impoundment

Table 13.3-4 – Evaporation Pond Contingency Wastewater and LCRS Fluid Sampling

13.2 Compliance or Operational Monitoring Tables

Table 13.2-1¹ Surface Impoundment and BADCT Performance Standard Inspection & Alert Monitoring				
Parameter	Performance Level	Monitoring Frequency	Response Action	Reporting Frequency
Freeboard - Evaporation Ponds and Water Storage Reservoirs	Minimum of 2 feet in 45 acre and 85 -acre WSRs Minimum of 5 feet in Evaporation Ponds 1, 2 and 3	Monthly	Contingency Actions for exceeded AL for freeboard. For Overtopping, See Discharge Limitation Violation sections of the permit.	Facility Log Book recordkeeping per Section 10.2, Exceeded value per Section 10.3, Annual Report per Section 10.4
Upper Liner Integrity - Evaporation Ponds and Water Storage Reservoirs	No visible tears, punctures, cracks, deformities, or other damage due to sunlight, wind, weather, debris, vegetation, animals, or other adverse conditions.	Monthly and after a significant storm or other natural disaster affecting the facility, regardless of operating status.	Contingency Actions for Exceeded Performance Standard. For Liner Failure, Unexpected Loss of Fluid, or Containment Structure Failure, see Discharge Limitation Violations	Facility Log Book recordkeeping per Section 10.2, Exceeded value per Section 10.3, Annual Report per Section 10.4
Dam and Berm Integrity Evaporation Ponds, and Water Storage Reservoir ³	No visible structural damage, breach, erosion of embankments, or seepage that could cause a loss of structural integrity or breach of a dike or liner system or seepage through dam from liner leakage.	Monthly and after a significant storm or other natural disaster, regardless of operating status.	Contingency Action for Operational Performance AL. For breach resulting in Containment Structure Failure see Discharge Limit Violations	Facility Log Book recordkeeping per Section 10.2, Exceeded value per Section 10.3, Annual Report per Section 10.4
LCRS Fluid Levels - Evaporation Ponds, and Water Storage Reservoirs	Liner Leakage Rate less than the Liner Leakage AL in Section 13.2 tables	Daily and after a significant storm or other natural disaster affecting the facility, regardless of operating status	Contingency Actions for Exceeding Liner Leakage AL. For Liner Failure see Discharge Limitation Violations	Facility Log Book recordkeeping per Section 10.2, Exceeded value per Section 10.3, Annual Report per Section 10.4
Leakage Collection and Recovery System for the Evaporation Ponds and Water Storage Reservoirs - Sump Fluid Level	Fluid level in sump maintained below invert of collection pipes.	Daily	Pump fluid out of sump until fluid level is below invert of pipe.	Facility Log Book recordkeeping per Section 10.2, Exceeded value per Section 10.3, Annual Report per Section 10.4
Leakage Collection and Recovery System for the Evaporation Ponds and Water Storage Reservoirs	No obstruction in the inspection sump, proper functioning of the drainage system, pump(s) maintained in good operational condition.	Monthly and after a significant storm or other natural disaster, regardless of operating status.	Contingency Action for Operational Performance AL. For Unauthorized Release to Subsurface or sump overflow, see Discharge Limitation Violation and excessive liner leakage	Facility Log Book recordkeeping per Section 10.2, Exceeded value per Section 10.3, Annual Report per Section 10.4

Table 13.2-1¹ Surface Impoundment and BADCT Performance Standard Inspection & Alert Monitoring				
Parameter	Performance Level	Monitoring Frequency	Response Action	Reporting Frequency
Flow Meters, Solution Level Sensors, LCRS sensors, or other measuring devices	Maintained in operational condition	Monthly	Contingency Action for Operational Performance ALs	Facility Log Book recordkeeping per Section 10.2, Exceeded value per Section 10.3, Annual Report per Section 10.4
Stormwater run-on/run-off control features Sludge Landfill and Rubbish Landfill	Maintained to divert run-on around APP facilities and to prevent stormwater from ponding on landfills.	Monthly	BADCT maintenance	Facility Log Book recordkeeping per Section 10.2, Exceeded value per Section 10.3, Annual Report per Section 10.4

1 Refer to Section 10.2, 10.3, and 10.4 for Reporting and Recordkeeping requirements.

2 Evaporation Ponds 1, 2 and 3 were designed to meet ADWR dam safety requirements. ADEQ BADCT typically consists of a minimum of 2 feet of freeboard. To satisfy ADWR requirements, Evaporation Pond 1, 2 and 3 designs include 5 feet of freeboard.

3 The Water Storage Reservoir are subgrade structures and do not have dams or berms to inspect.

SMRF reporting is not required under this table.

Table 13.2-2 Evaporation Ponds and Water Storage Reservoirs Flow Rate and LCRS Fluid Level Monitoring Points				
Facility	Latitude (N)	Longitude (W)	Location/ Description	Monitoring Method
EVAPORATION POND FLOW MONITORING (Monthly, reported as average annual flow)				
Evap Ponds ¹	33° 22' 22.57"	112° 51' 53.5"	Main discharge pipe leading to the evaporation ponds	Manual
LCRS FLUID LEVEL MONITORING/ CONTINGENCY SAMPLING LOCATIONS (Daily)				
85-Acre Water Storage Reservoir				
West Sump (1)	33°23'35.19"	112°51'09.6"	West embankment north of intake structure	Electronic or Manual
North Sump (2)	33°23'39.1"	112°50'50.15"	North embankment	Electronic or Manual
South Sump (3)	33°23' 20.5"	112°50'59.2"	South embankment	Electronic or Manual
45-Acre Water Storage Reservoir				
North Collection Sump	33° 23' 56.1"	112° 51' 00.7"	Middle of north embankment	Electronic or Manual
South Collection Sump	33° 23' 45.52"	112° 50' 57.16"	Middle of south embankment	Electronic or Manual
Evaporation Pond 1				
North Sump	33° 22' 13.41"	112° 52' 4.89"	North end of 1A/1B internal embankment	Electronic or Manual
Central Sump	33° 22' 0.46"	112° 52' 4.7"	Middle of 1A/1B internal embankment	Electronic or Manual
South Sump	33° 21' 51.35"	112° 52' 4.62"	South end of 1A/1B internal embankment	Electronic or Manual
Evaporation Pond 2				
2A West Sump	33° 22' 5.33"	112° 51' 32.61"	2A South embankment west side	Electronic or Manual
2A East Sump	33° 22' 5.46"	112° 51' 14.71"	2A South embankment east side	Electronic or Manual
2B/2C West Sump	33° 21' 50.24"	112° 51' 33.60"	2B West embankment	Electronic or Manual
2B East Sump	33° 21' 48.37"	112° 51' 19.02"	2B South embankment east side	Electronic or Manual
Evaporation Pond 3				
3A West Sump	33° 21' 34"	112° 52' 26"	3A West embankment	Electronic or Manual
3A East Sump	33° 21' 34"	112° 52' 09"	3A East embankment	Electronic or Manual
3B West Sump	33° 21' 34"	112° 52' 09"	3B West embankment	Electronic or Manual
3B East Sump	33° 21' 34"	112° 51' 52"	3B East embankment	Electronic or Manual

- Flow to the Evaporation Ponds is measured at seven meters located upstream of the main pipe leading to the ponds. The location provided in this table is the location of the main pipe to the ponds.
- Measurement is required from only one location per evaporation pond cell or water storage reservoir.
- SMRF Reporting is not required under this table.

Table 13.2-3 WSR and Evaporation Pond LCRS Monitoring Alert Levels						
Location	Parameter¹	AL1 ^{2,3} (GPD)	AL2 ^{2,3} (GPD)	Monitoring Method	Monitoring Frequency⁴	Reporting Frequency
85-acre WSR						
West Sump (1)	Liquid Pumped ⁵	35,900	359,100	Metered or calculated	Daily	Annually
North Sump (2)	Liquid Pumped ⁵	56,400	562,400	Metered or calculated	Daily	Annually
South Sump (3)	Liquid Pumped ⁵	57,900	579,200	Metered or calculated	Daily	Annually
45-acre WSR						
Zone 1 North	Liquid Pumped ⁵	41,100	410,900	Metered or calculated	Daily	Annually
Zone 8 South	Liquid Pumped ⁵	38,500	385,600	Metered or calculated	Daily	Annually
Evaporation Pond 1						
1 North	Liquid Pumped ⁵	131,100	1,479,200	Metered or calculated	Daily	Annually
1 Central	Liquid Pumped ⁵	108,200	1,216,500	Metered or calculated	Daily	Annually
1 South	Liquid Pumped ⁵	152,900	1,723,600	Metered or calculated	Daily	Annually
Evaporation Pond 2						
2A West	Liquid Pumped ⁵	72,300	870,200	Metered or calculated	Daily	Annually
2A East	Liquid Pumped ⁵	80,500	964,900	Metered or calculated	Daily	Annually
2B/2C West	Liquid Pumped ⁵	73,600	883,100	Metered or calculated	Daily	Annually
2B East	Liquid Pumped ⁵	94,600	1,089,700	Metered or calculated	Daily	Annually
Evaporation Pond 3						
3A West	Liquid Pumped ⁵	79,600	965,700	Metered or calculated	Daily	Annually
3A East	Liquid Pumped ⁵	79,600	965,700	Metered or calculated	Daily	Annually
3B West	Liquid Pumped ⁵	79,600	965,700	Metered or calculated	Daily	Annually
3B East	Liquid Pumped ⁵	79,600	965,700	Metered or calculated	Daily	Annually

- 1 AL1 is the daily threshold value at which the permittee shall place into action the appropriate requirements specified in Section 3.5.1.2.1 and 4.5.1.2.1 (Exceeding of AL1 for Normal Liner Leakage).
- 2 AL2 is the daily threshold value at which the permittee shall place into action the appropriate requirements specified in Section 3.5.1.2.2 and 4.5.1.2.2 (Exceeding of AL2 for Excessive Liner Leakage).
- 3 AL1 or AL2 shall be reported as exceeded when the amount of leakage pumped from the sump for the impoundment is greater than the applicable quantity in the table above. For Self-Monitoring Report Form (SMRF) reporting purposes, AL1 is equivalent to the AL and AL2 is equivalent to the Discharge Limit (DL). An exceeded AL2 reported as the DL is not a permit violation unless the permittee fails to perform contingency actions as required in Sections 3.5.1.2.2 or 4.5.1.2.2 of this permit.
- 4 LCRS inspection and leakage quantification shall be performed daily. Evacuation of fluids in the sump shall be performed as necessary for accurate monitoring and effective operation of the collection system. Routine analysis of sump fluids is not required. However, characterization of sump fluids is required as a contingency action in Sections 3.5 and 4.5.
- 5 The "Liquid Pumped" value to be reported is the amount of liquid pumped from the LCRS sump in gallons per day (GPD) on a daily basis when pumping is required in response to liner leakage. This value shall be reported in Annual SMRFs, in the Annual Report, and maintained in the Facility Logbook.

- SMRF Reporting is not necessary under this table.

WSR = water storage reservoir

LCRS = leak collection and recovery system

GPD = gallons per day

Table 13.2-4
Water Reclamation Facility (WRF) Sludge and Cooling Tower Sludge
Sampling Parameters

Parameter	Units	AL (RCRA TCLP)	Monitoring Frequency¹	Reporting Frequency
pH	SU	<2,>12.5	Semi-annually	Annually
Arsenic	mg/L	5.0	Semi-annually	Annually
Barium	mg/L	100.0	Semi-annually	Annually
Cadmium	mg/L	1.0	Semi-annually	Annually
Chromium (Total)	mg/L	5.0	Semi-annually	Annually
Lead	mg/L	5.0	Semi-annually	Annually
Mercury	mg/L	0.2	Semi-annually	Annually
Selenium	mg/L	1.0	Semi-annually	Annually
Silver	mg/L	5.0	Semi-annually	Annually
Free Liquid ²	--	Pass/Fail	Semi-annually	Annually

1 The WRF sludge shall be characterized, including paint filter test or equivalent test method, through representative sampling on a semi-annual basis (2 times per year) in accordance with requirements in this permit. Cooling tower sludge shall be characterized on a per disposal event basis.

2 Characterization shall include the paint filter test or an equivalent test method.

SU = standard units

mg/L = milligram per liter

-- = Unitless

RCRA TCLP = Resource Recovery and Conservation Act Toxicity Characteristic Leaching Procedure

SMRF Reporting is not necessary under this table.

Table 13.2-5 POC Well PV-R2AR Semiannual (1x / 6 Months) Groundwater Monitoring						
Aquifer Monitored:	Shallow		Discharging Facility:		Sludge Landfill	
Parameter	Units	AWQS	AL	AQL	Monitoring Frequency	Reporting Frequency
pH	SU	NE	<6,>9	NE	Semiannual	Annual
Electrical Conductivity	umhos/cm	NE	Monitor only	NE	Semiannual	Annual
Antimony	mg/L	0.006	0.0054	0.006	Semiannual	Annual
Arsenic	mg/L	0.05	0.045	0.05	Semiannual	Annual
Barium	mg/L	2	1.8	2	Semiannual	Annual
Beryllium	mg/L	0.004	0.005	0.005	Semiannual	Annual
Cadmium	mg/L	0.005	0.0045	0.005	Semiannual	Annual
Chromium	mg/L	0.1	0.09	0.1	Semiannual	Annual
Fluoride	mg/L	4	NA ¹	4.9 ²	Semiannual	Annual
Lead	mg/L	0.05	0.045	0.05	Semiannual	Annual
Mercury	mg/L	0.002	0.0018	0.002	Semiannual	Annual
Nickel	mg/L	0.1	0.09	0.1	Semiannual	Annual
Nitrate-Nitrite	mg/L	10	NA	41 ³	Semiannual	Annual
Selenium	mg/L	0.05	0.045	0.05	Semiannual	Annual
Thallium	mg/L	0.002	0.005	0.005	Semiannual	Annual
Trihalomethanes (Total)	mg/L	0.1	0.09	0.1	Semiannual	Annual
Tritium	pCi/L	20,000	18,000	20,000	Semiannual	Annual
Cesium-134	pCi/L	75	67.5	75	Semiannual	Annual
Cesium-137	pCi/L	110	99	110	Semiannual	Annual
Cobalt-60	pCi/L	200	180	200	Semiannual	Annual

pCi/L = pico Curies per liter

1 NA = Not Applicable. When the Aquifer Quality Limit is set at the Statistically Calculated Value there is no Alert Level

2 Statistically Calculated Value is based on ambient groundwater quality monitoring data.

SMRF Reporting is required under this table.

AWQS = Aquifer Water Quality Standard

SU = standard units

pCi/L = pico Curies per liter

AL= alert level

mg/L = milligrams per liter

AQL = aquifer quality limit

umhos/cm = micro mhos per centimeter

13.3 13.3 Contingency Monitoring Tables

Table 13.3-1 Contingency LCRS Monitoring 85-acre WSR and 45-acre WSR Sections 3.4.1.3, 3.5.1.2.2, and 3.5.2.1		
Parameter¹	Monitoring Frequency	Reporting Frequency
pH	Within 5 days	Within 30 days
Alkalinity	Within 5 days	Within 30 days
Total Dissolved Solids (TDS)	Within 5 days	Within 30 days
Total Nitrogen ²	Within 5 days	Within 30 days
Calcium	Within 5 days	Within 30 days
Chloride	Within 5 days	Within 30 days
Fluoride	Within 5 days	Within 30 days
Magnesium	Within 5 days	Within 30 days
Potassium	Within 5 days	Within 30 days
Sodium	Within 5 days	Within 30 days
Sulfate	Within 5 days	Within 30 days
Antimony	Within 5 days	Within 30 days
Arsenic	Within 5 days	Within 30 days
Barium	Within 5 days	Within 30 days
Beryllium	Within 5 days	Within 30 days
Boron	Within 5 days	Within 30 days
Cadmium	Within 5 days	Within 30 days
Chromium	Within 5 days	Within 30 days
Lead	Within 5 days	Within 30 days
Mercury	Within 5 days	Within 30 days
Nickel	Within 5 days	Within 30 days
Selenium	Within 5 days	Within 30 days
Thallium	Within 5 days	Within 30 days
Zinc	Within 5 days	Within 30 days
Total Petroleum Hydrocarbons (TPH)	Within 5 days	Within 30 days
VOCs ³	Within 5 days	Within 30 days
Semi-VOCs ³	Within 5 days	Within 30 days
Radionuclides ³	Within 5 days	Within 30 days

1 Metals shall be analyzed for total metal concentration.

2 Total nitrogen includes nitrate-N and TKN-N.

3 Limited to those parameters within these groups detected in the initial wastewater characterization

LCRS = Leakage Collection and Recovery System

VOCs = volatile organic compounds

1 The fluid releases to earthen ditches shall be sampled at the interface between gunite lined and earthen ditches unless the release reaches one of the unlined sedimentation basins.

Table 13.3-2 Contingency Plant Upset and Overtopping Releases to Unlined Facilities Sampling (One sampling per plant upset or overtopping event that results in a separate release to unlined facility) Sections 3.5.2.2, 4.5.2.2 and 7.5					
Parameter	Units	AWQS ^{2,3}	AL ¹	Monitoring Frequency	Reporting Frequency
Estimated Volume	gallons	NE	NE	Within 5 days	Within 30 days
pH	SU	NE	<6 or >9	Within 5 days	Within 30 days
Total Alkalinity	mg/L	NE	NE	Within 5 days	Within 30 days
Potassium	mg/L	NE	700	Within 5 days	Within 30 days
Tritium	pCi/L	20,000	3,000(LLD)	Within 5 days	Within 30 days
Cobalt-60	pCi/L	200 ⁴	15(LLD)	Within 5 days	Within 30 days
Cesium-134	pCi/L	75 ⁴	15(LLD)	Within 5 days	Within 30 days
Cesium-137	pCi/L	110 ⁴	18(LLD)	Within 5 days	Within 30 days
Arsenic	mg/L	0.05	0.05	Within 5 days	Within 30 days
Boron	mg/L	NE	NE	Within 5 days	Within 30 days
Cadmium	mg/L	0.005	0.005	Within 5 days	Within 30 days
Chromium (dissolved)	mg/L	0.1	0.1	Within 5 days	Within 30 days
Chromium (total)	mg/L	0.1	0.1	Within 5 days	Within 30 days
Calcium	mg/L	NE	NE	Within 5 days	Within 30 days
Chloride	mg/L	NE	NE	Within 5 days	Within 30 days
Fluoride	mg/L	4.0	4.0	Within 5 days	Within 30 days
Lead	mg/L	0.05	0.05	Within 5 days	Within 30 days
Nickel	mg/L	0.1	0.1	Within 5 days	Within 30 days
Nitrate-Nitrite (as N)	mg/L	10	10	Within 5 days	Within 30 days
Magnesium	mg/L	NE	NE	Within 5 days	Within 30 days
Selenium	mg/L	0.05	0.05	Within 5 days	Within 30 days
Sodium	mg/L	NE	NE	Within 5 days	Within 30 days
Specific Conductivity	umhos/cm	NE	NE	Within 5 days	Within 30 days
Sulfate	mg/L	NE	NE	Within 5 days	Within 30 days
Total Dissolved Solids (TDS)	mg/L	NE	NE	Within 5 days	Within 30 days

- 1 ALs for constituents with AWQS were set at the AWQS to allow assessment of potential impact to groundwater from releases to the ground surface, if assessment is needed based on Contingency Requirements in this permit. Radiological ALs were set at the lower limit of detection (LLD).)
- 2 Laboratory reporting limits must be sufficient to allow comparison to Aquifer Water Quality Standards and determine compliance with the regulatory limits specified by this permit unless the permit level is below the practical quantitation limits/levels (PQLs) of ADHS certified laboratories using approved methods or the sample matrix interference prevents the laboratory from achieving the reporting limit. In such a case, formal written notice shall be provided by the permittee and certified analytical laboratory to ADEQ Groundwater Section Manager in accordance with the reporting locations specified in Section 10.
- 3 AWQS are provided in this table for the purposes of comparison only. The discharge quality is not limited to AWQS concentrations. However, in the event of liner failure or loss of fluid to the subsurface, the quality of the discharge with respect to AWQS is relevant.
- 4 These radionuclide concentrations, expressed in pCi/L, are the 4 millirem/year dose equivalents based on consumption of 2 liters per day of drinking water uptake (ARRA, 2003). These are provided per the Aquifer Water Quality Standard for Radionuclides in A.A.C. R18-11-406.E.3 and 4. If two or more radionuclides are present, the sum of their analytical results shall not exceed the total combined dose equivalent.

NE = Not Established. A numeric AWQS has not been established. An AQL will not be established in the permit for this parameter.
 AWQS = Aquifer Water Quality Standard AL= alert level SU = standard units
 umhos/cm = micro mhos per centimeter mg/L = milligrams per liter pCi/L = pico Curies per liter

Table 13.3-3 Evaporation Ponds Contingency Wastewater Sampling Locations for Overtopping of the Surface Impoundment (Section 4.5.2.2)				
Point Description	Latitude (N)	Longitude (W)	Sample Description	Frequency
Evaporation Pond 1				
North Sump	33° 22' 13.41"	112° 52' 4.89"	North end of 1A/1B internal	Within 5 days
Central Sump	33° 22' 0.46"	112° 52' 4.7"	Middle of 1A/1B internal	Within 5 days
South Sump	33° 21' 51.35"	112° 52' 4.62"	South end of 1A/1B internal	Within 5 days
Evaporation Pond 2				
Composite Point West End of 2A	33°22'05.58	112°51'35.81	Wastewater Discrete Sample	Within 5 days
Composite Point East End of 2A	33°22'05.72"	112°51'17.84"	Wastewater Discrete Sample	Within 5 days
Composite Point West End of 2B	33°21'50.6"	112°51'36.04	Wastewater Discrete Sample	Within 5 days
Composite Point East End of 2B	33°21'48.63"	112°51'22.14	Wastewater Discrete Sample	Within 5 days
Composite Point East End of 2C	33°21'50.08"	112°51'36.41"	Wastewater Discrete Sample	Within 5 days
2A West Collection Sump	33°22'05.49"	112°51'35.31"	LCRS Drain System	Within 5 days
2A East Collection Sump	33°22'05.62"	112°51'17.41"	LCRS Drain System	Within 5 days
2B/2C West Collection Sump	33°31'50.40"	112°51'63.30"	LCRS Drain System	Within 5 days
2B East Collection Sump	33°21'48.54"	112°51'21.72"	LCRS Drain System	Within 5 days
Evaporation Pond 3				
Composite Point North End of 3A	33° 21' 47"	112° 52' 17"	Wastewater Discrete Sample	Within 5 days
Composite Point South End of 3A	33° 21' 22"	112° 52' 17"	Wastewater Discrete Sample	Within 5 days
Composite Point North End of 3B	33° 21' 47"	112° 52' 01"	Wastewater Discrete Sample	Within 5 days
Composite Point South End of 3B	33° 21' 22"	112° 52' 01"	Wastewater Discrete Sample	Within 5 days
3A West Collection Sump	33° 21' 34"	112° 52' 26"	LCRS Drain System	Within 5 days
3A East Collection Sump	33° 21' 34"	112° 52' 09"	LCRS Drain System	Within 5 days
3B West Collection Sump	33° 21' 34"	112° 52' 09"	LCRS Drain System	Within 5 days
3B East Collection Sump	33° 21' 34"	112° 51' 52"	LCRS Drain System	Within 5 days

Reserved - This information shall be submitted in accordance with Compliance Schedule Section 12.1

LCRS = leakage collection and recovery system

Table 13.3-4
Evaporation Ponds
Contingency Wastewater and LCRS Fluid Sampling
(One Sampling Event Per Exceeded Liner Leakage AL2 or Liner Failure Event)
(Sections 4.5.1.2)

Parameter¹	AWQS/DL	Monitoring Frequency	Reporting Frequency
Radionuclide Indicator Parameters²			
Tritium (pCi/L)	20,000	Within 5 days	Within 30 days
Cesium-134 (pCi/L)	75	Within 5 days	Within 30 days
Cesium-137 (pCi/L)	110	Within 5 days	Within 30 days
Cobalt-60 (pCi/L)	200	Within 5 days	Within 30 days
Other Parameters			
Cation/Anion Balance ³	NE	Within 5 days	Within 30 days
pH (SU)	<4 or > 11	Within 5 days	Within 30 days
Antimony (mg/L)	NE	Within 5 days	Within 30 days
Arsenic (mg/L)	0.05	Within 5 days	Within 30 days
Barium (mg/L)	2	Within 5 days	Within 30 days
Beryllium (mg/L)	0.004	Within 5 days	Within 30 days
Boron (mg/L)	NE	Within 5 days	Within 30 days
Cadmium (mg/L)	0.005	Within 5 days	Within 30 days
Chromium (mg/L)	0.1	Within 5 days	Within 30 days
Fluoride (mg/L)	4.0	Within 5 days	Within 30 days
Lead (mg/L)	0.05	Within 5 days	Within 30 days
Mercury (mg/L)	0.002	Within 5 days	Within 30 days
Nickel (mg/L)	0.1	Within 5 days	Within 30 days
Nitrate-Nitrite (mg/L)	10	Within 5 days	Within 30 days
Total Nitrogen ⁴ (mg/L)	10	Within 5 days	Within 30 days
Selenium (mg/L)	0.05	Within 5 days	Within 30 days
Thallium (mg/L)	0.002	Within 5 days	Within 30 days
Total Dissolved Solids (mg/L) (TDS)	NE	Within 5 days	Within 30 days
Total Trihalomethanes (mg/L)	0.1	Within 5 days	Within 30 days

1 Metals shall be analyzed for total recoverable metals unless otherwise noted as dissolved.

2 Radionuclide samples are collected in accordance with NRC requirements and locations may differ slightly from those specified in Table 13.3-4 of this permit.

3 Cation/Anion Balance shall be performed for the purpose of allowing geochemical comparisons between fluids that may enter the vadose zone from leakage through the secondary liner and groundwater quality. A Cation/Anion Balance consists of analysis for a minimum of the following constituents: aluminum, calcium, copper, magnesium, manganese, sodium, potassium, iron, zinc (cations) and alkalinity, sulfate, chloride, fluoride, nitrate, bicarbonate, and carbonate (anions).

4 Total nitrogen includes nitrate-N, nitrite and TKN-N.

DL = Discharge Limit

SU = standard units

mg/L = milligrams per liter

NE = Not established. Monitor only. Report results without comparison to DL.

AWQS = Aquifer Water Quality Standard

14.0 REFERENCES AND PERTINENT INFORMATION

The terms and conditions set forth in this permit have been developed based upon the information contained in the following, which are on file with the Department:

1. (A) APS Request for *Significant Amendment Application* dated October 21, 2010.
APS, *Supplemental Information to Support Amendment to Area-Wide Aquifer Protection Permit*, June 24, 2011.
URS, *Palo Verde Nuclear Generation Station 261-Acre Evaporation Pond 1 Design Report*, May 24, 2011,
URS, *Construction Specification for the Evaporation Pond 1 Rehabilitation Project*, September 24, 2010.
URS, *Geotechnical Data Report for the Evaporation Pond 1 Rehabilitation Project*, September 24, 2010.
URS, *Construction Quality Assurance Plan for the Evaporation Pond 1 Rehabilitation Project*, September 24, 2010.
URS, *Technical Memorandum-Alert Level Revisions*, June 6, 2011.
URS, *Response to ADEQ Review Comments*, January 6, 2012.
- (B) Significant Amendment issued October 25, 2011.
2. Public Notice, dated May 24, 2012 (Arizona Business Gazette).
3. Public Hearing dated N/A.
4. Responsiveness Summary, dated June 26, 2012.
5. Minor Amendment Signature/Issuance: January 16, 2013.
6. Minor Amendment Signature/Issuance: January 7, 2014
7. Other Amendment Signature/Issuance: August 13, 2014
8. Significant Amendment, Application received on April 3, 2015
9. Public Notice, dated November 8, 2015 (Buckeye Valley News)
10. Public Hearing dated N/A.
11. Significant Amendment issued March 16, 2016
12. Significant Amendment, Application received on May 7, 2015.
13. Public Notice, dated June 23, 2016 (Buckeye Valley News)
14. Public Hearing dated N/A.
15. Responsiveness Summary, dated July 29, 2016.
16. Significant Amendment issued November 15, 2016
17. Significant Amendment, Application received on March 31, 2017.
18. Public Notice, dated November XX, 2017 (Buckeye Valley News)
19. Public Hearing dated N/A.
20. Responsiveness Summary, dated December XX, 2017.

Legal Description:

The west half (W1/2) of Section 26, all of Section 27 except the northwest quarter (NW1/4) of said Section 27, the southeast quarter (SE1/4) of Section 28, the east half (E1/2) of Section 33, all of Section 34, the west half (w1/2) of Section 35, all in Township one (1) north, Range six (6) west of the Gila and Salt River Base and Meridian; and the west half (W1/2) of the west

half (W1/2) of Section 2, all of Section 3, the east half (E1/2) of Section 4, the north half (N1/2), the southwest quarter (SW1/4), and the west half (W1/2) of the southeast quarter (SE1/4) of 10, And the east half (E1/2) of Section 9, all in Township one (1) south, Range six (6) west of the Gila and Salt River Base and Meridian, all in the County of Maricopa, state of Arizona, Consisting of 4258.3 acres, more or less;

Also that part of the east half of the southwest quarter of Section twenty-three (23), Township one (1) north, Range six (6) west of the Gila and Salt River Base and Meridian, Maricopa County, Arizona more particularly described as follows:

Beginning at the southeast corner of the said east half of the southwest quarter of Section 23; thence west, an assumed bearing along the south line of the said east half of the southwest quarter of Section 23, for a distance of 762.04 feet; thence north 0 degrees 03 minutes 39 seconds west, parallel to the east line of the said east half of the southwest quarter of Section 23, for a distance of 1946.46 feet to a point on the south right-of-way line of the 200 foot wide Hassayampa-Salome highway, as recorded in book 12 of road maps, page 82, Maricopa County Recorder, Maricopa County, Arizona; thence continuing north 0 degrees 03 minutes 39 seconds west, for a distance of 234.15 feet to a point on the north right-of-way line of said highway; thence south 58 degrees 43 minutes 35 seconds east, along said north right-of-way line, for a distance of 892.17 feet to a point on the said east line of the east half of the southwest quarter of Section 23; thence south 0 degrees 03 minutes 39 seconds east, along said east line, for a distance of 234.15 feet to a point on the said south right-of-way line; thence continuing south 0 degrees 03 minutes 39 seconds east, for a distance of 1483.31 feet to the true point of beginning; except the east 305 feet of the south 305 feet thereof.

15.0 NOTIFICATION PROVISIONS

15.1 Annual Registration Fees

The permittee is notified of the obligation to pay an Annual Registration Fee to ADEQ. The Annual Registration Fee is based upon the amount of daily influent or discharge of pollutants in GPD as established by A.R.S. § 49-242.

15.2 Duty to Comply [A.R.S. §§ 49-221 through 49-263]

The permittee is notified of the obligation to comply with all conditions of this permit and all applicable provisions of Title 49, Chapter 2, Articles 1, 2 and 3 of the Arizona Revised Statutes, Title 18, Chapter 9, Articles 1 through 4, and Title 18, Chapter 11, Article 4 of the Arizona Administrative Code. Any permit non-compliance constitutes a violation and is grounds for an enforcement action pursuant to Title 49, Chapter 2, Article 4 or permit amendment, suspension, or revocation.

15.3 Duty to Provide Information [A.R.S. §§ 49-243(K)(2) and 49-243(K)(8)]

The permittee shall furnish to the Director, or an authorized representative, within a time specified, any information which the Director may request to determine whether cause exists for amending or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

15.4 Compliance with Aquifer Water Quality Standards [A.R.S. §§ 49-243(B)(2) and 49-243(B)(3)]

The permittee shall not cause or contribute to a violation of an aquifer water quality standard at the applicable point of compliance for the facility. Where, at the time of issuance of the permit, an aquifer already exceeds an aquifer water quality standard for a pollutant, the permittee shall not discharge that pollutant so as to further degrade, at the applicable point of compliance for the facility, the water quality of any aquifer for that pollutant.

15.5 Technical and Financial Capability

[A.R.S. §§ 49-243(K)(8) and 49-243(N) and A.A.C. R18-9-A202(B) and R18-9-A203(E) and (F)]

The permittee shall have and maintain the technical and financial capability necessary to fully carry out the terms and conditions of this permit. Any bond, insurance policy, trust fund, or other financial assurance mechanism provided as a demonstration of financial capability in the permit application, pursuant to A.A.C. R18-9-A203(D), shall be in effect prior to any discharge authorized by this permit and shall remain in effect for the duration of the permit.

15.6 Reporting of Bankruptcy or Environmental Enforcement [A.A.C. R18-9-A207(C)]

The permittee shall notify the Director within 5 business days after the occurrence of any one of the following:

1. The filing of bankruptcy by the permittee.
2. The entry of any order or judgment not issued by the Director against the permittee for the enforcement of any environmental protection statute or rule.

15.7 Monitoring and Records [A.R.S. § 49-243(K)(8) and A.A.C. R18-9-A206]

The permittee shall conduct any monitoring activity necessary to assure compliance with this permit, with the applicable water quality standards established pursuant to A.R.S. §§ 49-221 and 49-223 and §§ 49-241 through 49-252.

15.8 Inspection and Entry [A.R.S. §§ 41-1009, 49-203(B) and 49-243(K)(8)]

In accordance with A.R.S. §§ 41-1009 and 49-203(B), the permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to enter and inspect the facility as reasonably necessary to ensure compliance with Title 49, Chapter 2, Article 3 of the Arizona Revised Statutes, and Title 18, Chapter 9, Articles 1 through 4 of the Arizona Administrative Code and the terms and conditions of this permit.

15.9 Duty to Modify [A.R.S. § 49-243(K)(8) and A.A.C. R18-9-A211]

The permittee shall apply for and receive a written amendment before deviating from any of the designs or operational practices specified by this permit.

15.10 Permit Action: Amendment, Transfer, Suspension & Revocation

[A.R.S. §§ 49-201, 49-241 through 251, A.A.C. R18-9-A211, R18-9-A212 and R18-9-A213]

This permit may be amended, transferred, renewed, or revoked for cause, under the rules of the Department.

The permittee shall notify the Groundwater Section in writing within 15 business days after any change in the owner or operator of the facility. The notification shall state the permit number, the name of the facility, the date of property transfer, and the name, address, and phone number where the new owner or operator can be reached. The operator shall advise the new owner or operators of the terms of this permit and the need for permit transfer in accordance with the rules.

16.0 ADDITIONAL PERMIT CONDITIONS

16.1 Other Information [A.R.S. § 49-243(K)(8)]

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, the permittee shall promptly submit the correct facts or information.

16.2 Severability [A.R.S. §§ 49-201, 49-241 through 251, A.A.C. R18-9-A211, R18-9-A212 and R18-9-A213]

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby. The filing of a request by the permittee for a permit action does not stay or suspend the effectiveness of any existing permit condition.

16.3 Permit Transfer

This permit may not be transferred to any other person except after notice to and approval of the transfer by the Department. No transfer shall be approved until the permittee complies with all transfer requirements as specified in A.A.C. R18-9-A212 (B) and (C).